MODERN BUSINESS

THE PRINCIPLES AND PRACTICE OF COMMERCE, ACCOUNTS AND FINANCE

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AUDITING AND COST ACCOUNTS

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AUTHOR'S PREFACE: AUDITING

In preparing this book the idea of the author has been twofold; to reach, and if possible, to benefit not only the practicing auditor, but also the man in active business life, who has neither the time, the opportunity nor the inclination to attend a course on accounting in some school of commerce. In carrying out this idea it may be that the author can be accused of having wandered out of his own field of Auditing and of trespassing on the broader field of Practical Accounting by entering more fully into the discussion of underlying principles than the strictly defined limits of his subject would justify. If obliged to plead guilty to such a charge, his plea in extenuation must be that the boundary line between the two fields is not marked by any well-defined wall, and that the auditor must of necessity encroach on the territory of the practical accountant, if he expects to do any effective work in his own field. This would be true even if he confines himself to the mere verification of the accuracy of the accounts he is examining. It is much more so if he undertakes the higher functions of his profession in giving advice to his clients with a view to improving their office methods in accordance with modern scientific accounting ideas.

The progressive business man will be interested in a treatise on Auditing in its restricted sense, which will be of service to him in enabling him to determine whether the auditor employed by him is doing his whole duty. Of much greater interest should be some knowledge of

the constructive work that he can expect from the auditor and the benefits to be derived from it. If this should result in some improvement in business methods, the mission of this book will have been accomplished.

AUTHOR'S PREFACE TO COST ACCOUNTS

One of the essential qualities of the man of business of the present time is the power to analyse a financial statement, the figures represented in a manufacturing account, the cost of selling, the cost of general administration, and to determine the facts necessary for good administration. To be able to do this accurately is of the most prime importance in modern industrial organization. During the last ten years the importance of this subject has been growing upon the business world. Questions of business policy, matters affecting foresight and good administration, when properly considered, must embrace propositions affecting the details of cost. Itemized information, properly and scientifically set forth, is requisite to make management intelligent as to procedure involved in every department of business and in every negotiation undertaken.

In furtherance of education in this field of factory cost accounting this volume is prepared. Progressive business men should not be deceived into an undertaking to establish systems impulsively and without considering the real need of the proposition under consideration. Perhaps strongest emphasis should be placed upon this warning,—that the business should be studied with the greatest pains and concentration before any attempt whatever is made to evolve, much less to create or install, a system of so called cost accounting.

General managers have in the past to a great ex-

tent held this entire subject somewhat in contempt, depending particularly upon their natural capacity, and relying upon their knowledge of human nature, coupled with such fugitive information as might be furnished them, to conduct effective campaigns. This has been particularly true with reference to contractors, various small coal and ore operators in the western states, and generally men who have risen to prominence by integrity, executive ability, great force, and keen insight into the motives of men. If it ever was possible to carry on campaigns of this kind effectively under conditions which prevailed for many years in this country, the time has gone by. At the present time the necessity for absolute knowledge is imperative. No longer is it possible to map out a successful program by guessing at results, and the utmost interest is shown in connection with the demand for results. Under modern conditions corporations particularly are keenly alive to the necessity of getting men who can produce results. This demand is insistent, clamorous and appropriate, and written statements must reflect it. The tendency is toward a greater lucidity and more scientific arrangement. The author has sought to simplify the subject, or group of subjects, and at the same time make it sufficiently practical and set forth the guiding principles in such a way as to attract the men of mature judgment and experience.

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AUDITING

CHAPTER I

GENERAL PRINCIPLES

1. *Definition of auditing.*—In defining auditing it is usual to say that it is derived from the Latin word audit, he hears, and that it is the examination of an account by a person appointed to test its accuracy, by comparing each item with vouchers, adding up each page, and at last authoritatively stating the sum owing or at credit.

If such a definition is accepted it is likely to lead to serious mischief, because an incomplete audit, like any other half-truth, is liable to be more dangerous than the entire absence of any information. Unless the auditor goes deeper into the accounts that he is examining than merely to test their accuracy and to ascertain whether they are supported by vouchers, his audit, unless we give the words of the definition much greater meaning than they usually convey, will be of so superficial a character that it will be worth little more than the so-called audit of a committee of stockholders, men who have no practical knowledge of accounts.

In addition to the points covered by the definition as given, the auditor should be able to make such an analysis of the accounts and of the business of which they are the history as to present to the proprietor not only a statement of their accuracy, but also an intelligent

idea of the whole trend of the business, to point out weaknesses and to recommend improvements which will add to its efficiency by applying the information obtained from a study of past methods and transactions in the formulating of advice for the future conduct of the business. The study of the history of our own and of other countries would be of little use unless we can gain from it some knowledge of what evil we should avoid and what good we should strive to attain in the future government of the nation. In the same way our study of the accounts, which are the history of a business, should lead us to conclusions which will be of practical value in the future conduct of that business.

Definitions that are based on derivations are apt to be misleading, for words, like children, are apt to deviate from the ways of their parents, and to broaden out as they grow older. Therefore, the auditor is now no longer content to hear only, he must reason about what he hears, and must be able to draw correct conclusions and to state them clearly and forcefully.

2. *The auditor a skilled investigator.*—It is, therefore, apparent that an auditor is more than a critic. He must be a person of original ideas, able to construct anew, when his investigations have caused him to tear down what has been wrongly built. It is intended in these pages to take this view of the auditor's work, and to show not only how he should detect what is wrong, but also how he should institute methods that will prevent the recurrence of the wrong in the future.

It is not, however, intended to imply that an auditor can absolutely prevent wrongdoing or that he can always discover it, if it has taken place. He is not an insurer, nor can he be expected to discover what is not to be found in the accounts, which may have been kept

in so careless a manner that it would be impossible to trace any transaction the details of which had been skillfully concealed, or of which there was no record at all except such as the interested person himself made. For instance a book concern, which did principally a mail order business, made a few cash sales, especially about the beginning of the school year. It was the practice of the man on the floor to hand the cashier, who was also the bookkeeper, the money he received and a scrap of paper with the amount written on it. The bookkeeper was supposed to enter the total of these tickets in his cash sales column at the end of the day. As he destroyed the tickets and as there was no other record, the auditor could only state that there was every reason to believe, from the general recollection of the salesman as to the amount of his average daily sales, that the bookkeeper had largely understated the amount received in the year, but that was only his opinion and not in any sense a proof.

As has been well said, "The opinion is still largely prevalent that an auditor is merely an expert bookkeeper, and that his duties consist mainly of writing up and balancing books of account, and checking the arithmetical accuracy of the figures in statements of earnings or balance sheets, and yet such duties, with the qualifications necessary therefor, form only a small fraction of those required of the successful practicing public accountant. His services are mainly of value in relation to problems involving a thorough knowledge of the principles of commerce, finance and law, and in the application of these principles to any given series of facts disclosed by the examination, not only of the books of account, but of the original transactions which these books should record. In other words, the public

accountant is a skilled investigator who is continually applying his wide training and experience to the ascertainment of facts from any material to which he can obtain access, while the bookkeeper merely ascertains such facts as may be recorded in his books, or records in his books such facts as have been ascertained for him by others."

3. *Training and education of the auditor.*—If this is the correct view to take of the work of the auditor, it is evident that he must in some way make himself acquainted with the underlying principles of accounting; in other words, that he must obtain an accounting education. In the minds of some business men there is a prejudice against those who have received an academic training, on the ground that they are liable to be nothing more than theorists. Such men claim that the only way to educate a business man is by practical experience. This prejudice has been obliged to yield in favor of the university graduate in mechanical and electrical engineering and similar lines, in consequence of the excellent record made by those who have acquired in the universities the theoretical knowledge that has enabled them to do better practical work, because they were doing that work intelligently. The prejudice still lingers in regard to office work in general, and is caused partly by ignorance on the part of employers as to the real work that should be done by their accounting force, and partly from the lack of an adequate idea as to what real education means. If by education we mean the cramming of a pupil's mind with facts or rules without any true conception of their meaning or of the relations in which they stand to each other, it is perfectly safe to say that it is a waste of time.

This kind of an education fits a man for a certain groove in which he moves in a monotonous, routine way, a mere piece of mechanical machinery, incapable of independent thought or action. Any idea of possible improvement in methods is entirely foreign to his mind. If confronted with a new condition to which his rules do not apply, he is helpless and liable to make mistakes that may be disastrous, because his action is based on insufficient knowledge of the foundation principles underlying all work whether mechanical or mental.

True education teaches the pupil to understand these foundation principles and to do his work intelligently, because he knows why he does certain things in a certain way. He is not content with the answer given by a teacher in a so-called business school, when asked the reason for a particular entry on the books: "You must make it that way because that is the right way to make it." The man who handles his accounts or his machinery on this principle will be able to drift along successfully as long as everything is normal, but he is in serious trouble when emergencies arise that require intelligent action.

It is not pretended by the advocates of higher education that a man may attend a technical school, whether of engineering or of business, and by obtaining a certain number of credits, become by that fact alone a competent practical engineer or a thoroughly equipped business man. But it is contended that the graduate of such a school, if he has made fairly good use of his time, will be in a position to make better use of the practical experience that comes to him, than can the man who has no grounding in fundamental scientific prin-

ciples to guide him in understanding the problems that he is called upon to solve; and the facts are all in favor of the truth of the contention.

The analytical faculty is more fully developed in some persons than in others. Some minds seem to be so fashioned that they seize, as by intuition, on the salient points of any subjects presented to them, while others have to reach them by a slow and laborious process of reasoning. There may be some who are so constituted that they can never develop the faculty at all, just as there are said to be those who cannot be taught the simplest principles of arithmetic. It is safe to say that if any of this class exist, they are wasting their time in trying to acquire any real knowledge of accounting principles. The ordinary man, however, can be taught to reason, and by practice can learn to reason quickly and accurately. He can accustom himself to study any given question thoroughly, so as to grasp all its essential features, before he attempts to find its answer and then to cover each point with due reference to each other, so that the result will "true up" to all the conditions.

This power of grasping all the elements of any problem is largely a question of the right use of the imagination, which is only another way of saying that one must have before one's mind a correct image of the whole problem, so that no part will be overlooked while the attention is concentrated on some other part.

Dr. Henry Van Dyke aptly summarized this whole matter when he said, "The chief benefit that a good student may get in a good college is not a definite amount of Greek and Latin, mathematics and chemistry, botany and zoology, history and logic, though this in itself is good. But far better is the power to apprehend and

distinguish, to weigh evidence and interpret facts, to think clearly, to infer carefully and to imagine vividly."

4. *Auditing is more than bookkeeping.*—Accounting propositions may be divided into two classes, which have been defined as follows:

(1) Bookkeeping, which deals with the correct method of recording any given set of facts, and with the correct mechanical interpretation of the facts which have been so recorded.

(2) Auditing or accounting, which deals with the more difficult and important problem of ascertaining, upon a proper interpretation of legal and other documents, and upon sound commercial or financial principles, the actual facts which have to be or should have been recorded in the books.

Since the auditor must deal with the books kept by the bookkeeper, it follows that he must be himself a good bookkeeper, in order to understand the accounts, while the bookkeeper, however excellent he may be in his limited sphere, may not be an accountant, nor indeed be capable of becoming one.

The successful auditor is not necessarily an expert arithmetician; that is, he does not need to be rapid in addition and other mathematical processes, unless his business is so limited that he expects to do all of it himself. If he is accurate and fairly quick, it is usually sufficient, as he can hire younger men to do the routine work much more cheaply than he can do it himself. Even if he is competent to do this routine work, his time should be too valuable to throw away on it.

CHAPTER II

OBJECTS OF AN AUDIT

5. *Three in number.*—All the authorities agree that the objects of an audit are three in number, the detection of fraud, the verification of the mechanical accuracy of the accounts and the discovery of errors of principle. In view of the great development in recent years of the science of accounting, it would seem as if it were time to add to these time-honored objects a fourth, namely, to ascertain in what ways the accounts can be improved to bring out more clearly the information which they contain, so that it can be used as a guide to future action.

Of these elements of the auditor's work the verification of the mechanical accuracy of the accounts is the least important and requires no more technical knowledge than is possessed by any fairly good bookkeeper. It may be said to be incidentally essential, as the statements on which the auditor's conclusions are based must necessarily be correct to start with. As a rule, fraud will imply errors in principle and in mechanical accuracy, since it can be covered up only by violating the laws of accountancy in both these respects.

The word "fraud" as here used covers not only cases of actual defalcation and embezzlement, but also the inaccurate statements that may be made of the conditions of a business by a person who possibly may not be intending to deceive, but whose desire to make a good showing may cause him to view the situation in a more

hopeful light than would an absolutely disinterested person, or who may be so ignorant of the true principles of accounting as to ignore items of liability that should be included in the balance sheet.

In the detection of fraud we have to be on our guard against every variety of manipulation of the accounts, but there is one peculiarity about almost all fraudulent sets of books. Whatever the method adopted to conceal one wrong entry, it is almost sure to be the same in regard to all others. This arises from two causes, a desire to simplify the work of keeping up the defalcation and a fear of trying a new method of concealing it when one has already proved so far successful. The history of all such cases is usually about the same. A temporary need arises for money, either on account of losses in gambling or speculation, or from some unusually insistent creditor who threatens to make trouble if his bill is not paid. The young man borrows the money from the cash drawer with the firm intention of replacing it when his luck turns or he has been able to save the amount from his salary. In order to carry it temporarily he makes a false entry to conceal it and finding that this is not discovered it is easy for him to repeat the operation every time he needs, or thinks he needs, more money, becoming more desperate with each increase of the amount, plunging deeper and deeper into gambling or speculation in hopes of making sufficient winnings to cover the whole shortage, until the amount becomes so large that even the most careless employer is sure to suspect something and begin an investigation. This is the history of nearly all cases that are discovered. It sometimes happens that the man becomes frightened after the first few steps have been taken, makes extraordinary efforts and repays the

money. How many such cases there may be there is no way to ascertain. The accountant naturally knows more about the ones where the money is irretrievably lost, but it is safe to say where the money is lost in gambling or speculation it is never replaced permanently.

The gradual nature of the progress of fraudulent entries, the insidious character of the temptation to which even the most honest is subjected is a strong argument in favor of the periodic audit. No man knows to what extent he can resist temptation when perhaps some emergency such as long-continued sickness in his family develops a desperate need for ready money. The best safeguard that a naturally honest but weak man can have is the knowledge that in a few weeks his work will be scrutinized by some one who will be sure to notice any irregularity.

6. *Detection of fraud.*—In an investigation for fraud where it is as yet only suspected, but not discovered, the auditor must study the whole system of accounts in order to locate the weak spots, trying to see where he could take advantage of them if he were in the bookkeeper's place and wished to avail himself of any opportunity to abstract money with the least chance of discovery. It is only in the crudest cases that the shortage is apparently covered by forcing the addition of the cash book. This is too dangerous, for someone might take a notion to go over the addition and discover the fraud. To aid in locating the more ingenious frauds we must study the various accounts in order to see whether there is not some one that is abnormally large or small, for as we have said the fraud is usually confined to one line. For instance, in a savings bank that had twenty ledgers of five hundred pages each, the aver-

age of the total balances per ledger was about $75,000.00, but the twelfth ledger had less than $40,000.00. Of course this might have been correct, but it was sufficiently strange that nineteen books should be so nearly alike, while one was so far away from the normal, as to put the examining accountant on notice, as the lawyers say, with the result that he discovered a defalcation of about $30,000.00. This case also illustrates a peculiarity of the ordinary defaulter, the leaving behind him of traces that can easily be followed when his system is once grasped. As usual the accounts were known by numbers. In looking over the teller's blotter, the accountant noticed that certain numbers were underlined, then that they were always one of two numbers constantly repeated and that the drafts that were supposed to have been made against these two accounts were always for round amounts from one hundred to one thousand dollars. Turning up the pages corresponding to these numbers he found them blank as to the underscored items. Adding up the underscored items as far as he found them to extend, he found that they made up the amount necessary to balance the ledger. The defaulter had confined his wrong entries to one ledger instead of scattering them among them all, where they would be less likely to be noticed, and had marked every fraudulent entry in a distinctive way. His doing so arose from a wish to keep the whole thing in as compact shape as possible, so that he could keep track of it himself.

When the auditor finds peculiar conditions such as these, his first thought must be; why are they here? It may be that there is a legitimate reason for their existence and he must not be content until he has analyzed the whole situation and satisfied himself as to their

correctness. The most suspicious entries may be susceptible of completely satisfactory explanation. An accountant, not of the highest rank, was once engaged in ascertaining whether the stock of a certain company had been fully paid up out of accumulated profits, as the books seemed to show. He found one entry crediting profit and loss and charging plant and machinery with a very considerable sum. It looked like a purely forced entry, and as the manager was a friend of his, he refused to go on with the investigation, as he did not wish to make a report reflecting on the honesty of the transaction. Other accountants were sent for, who became equally suspicious of this particular entry, but they went more thoroughly into the affair and discovered a number of items charged to expense and subsequently to profit and loss that were legitimately plant and machinery. The final inventory of the plant and machinery showed that this amount was necessary to bring the account up to the actual value on hand and that the entry was correct if the inventory was. As the inventory was undisputed, the accountants reported that the profit and loss account was correct and that the capital had been legitimately paid up out of profits actually earned. The first accountant had not gone deep enough to get below the surface and ascertain the why of the entry in question.

7. *Errors in mechanical accuracy.*—While errors in mechanical accuracy are frequently caused by the existence of fraud, they are not necessarily a sign of anything worse than carelessness or incompetency, and sometimes of too hurried work, in consequence of the fact that the bookkeeper has too much to do.

The fact that the books are in balance is no certain sign that they are correct, although that is often used

by employers as a reason for not having an audit made. Every bookkeeper of any experience has known cases where the trial balance was apparently correct, and yet where there were counter errors that had neutralized each other.

When there is a very small error in a trial balance it is often the practice to write it off as too insignificant to bother with, and this is often advised by the head of the office. But unless every item has been carefully checked back at least twice, it is dangerous to do this, besides being very unbusinesslike. It is not uncommon to have an error of a few cents develop into errors of hundreds of dollars before the thorough checking is finished.

The surest way of discovering an error in a trial balance is by the method of abstracting the accounts. But since there may be too many accounts to be verified to allow of each one being treated separately, the ledger may be divided into blocks of fifty, one hundred or two hundred pages each, according to circumstances, provided the bookkeeper is accurate in putting in his posting folio numbers. With a columnar sheet before you, post from the books of original entry to the respective columns by blocks, keeping the postings from each book separate from the others. In this way the footings of the books of original entry are proved by adding the totals of the items posted from each book and comparing with the totals of that book, and the balances of each block are proved by starting with the original net balance of the block, adding or deducting the debits and credits for that block and comparing with the net total of the balances at the end of the month or other period under review. Each block that proves out is eliminated, and only the part of the work need be checked that is

comprised in the block in which a discrepancy is discovered. When the bookkeeper has already checked back his work twice without locating his error, it is almost useless to check it over again, for the error, under such circumstances, is usually one that will be repeated over and over again. The independent posting is a slower process but it is absolutely certain to locate the error in the end. Many bookkeepers adopt the plan of posting to such an analytical sheet for all their work, so as to have a test ready-made for the trial balance when it is taken off, claiming that the ease with which an error is found more than compensates for the trouble of the double posting during the month. This is called "reverse posting," as the process consists of posting first to the ledger and then back again to the sheet.

Occasionally the professional accountant is asked to undertake the finding of honest errors in the mechanical work caused by carelessness or incompetency, but he always avoids such employment if he can, because it is purely mechanical in its nature and he realizes that his client cannot afford to pay professional fees for a service of this character, unless the case is exceptional, or there is reason to fear that the errors are not as honest as they seem.

As a rule, the auditor requires that the books be brought into balance before he enters upon his duties. This is especially true when the audit is periodical and for a fixed fee, as it is not fair to ask him to trace and correct errors of the bookkeeper. If he good-naturedly does it for a few times he is apt to find that the bookkeeper will develop a habit of leaving the errors without looking for them, as the auditor will be sure to find them anyway.

8. *Errors in principle.*—It is when the auditor dis-

covers errors in the principle that his best work is called for and his greatest troubles begin. They very frequently arise from honest ignorance, but are also frequently caused by the desire to make as good a showing as possible in the operation of the business. In either case it is a difficult thing to show the office manager that his course is a wrong one. If the error arises from an honest lack of knowledge it is usually accompanied by a total incapacity to understand the true principle involved. If the cause is a desire to swell the apparent profits the auditor is handicapped by the unwillingness of the manager to give up the practice, as his doing so may materially reduce the showing of the current year when compared with previous ones in which the error existed. And yet it is very important, in fact imperative, that correct ideas should be held in all matters affecting the calculation of the profits. Failure properly to discriminate between apparent and real profits has often led men to take steps that have eventually brought disaster.

It is well to understand thoroughly that any statement of the profits of a business is only an estimate until the business has been wound up. This arises from the fact that the profits depend on the value of the assets as shown in the balance sheet, which value may not be eventually realized. Any reduction in it would have to be provided for out of profits, which would be reduced to that extent. It is, therefore, extremely important that the greatest care be exercised in scrutinizing all asset accounts with a view to determining whether they are carried on the books at a figure which they can reasonably be considered worth.

There are many ways of reaching an erroneous result in calculating the profits of any given period, some

of which are almost too false on their face to deserve mention, but others have an insidious character that is very apt to deceive, owing largely to the different methods of figuring on the cost of goods. As the inventory is the basis of all profit figuring it is there that we are most apt to find errors that may lead to false results. Closely allied to these errors is that of calculating on profits before they are realized, even to the extent of paying dividends that exist only on paper. A similar error may arise from the method of treating losses from bad debts. It is a very common thing to find these charged to a suspense account which is still carried on the balance sheet as an asset and therefore is included in the profits. Many a business man prides himself on his conservatism in promptly charging past due accounts to suspense and it is very difficult sometimes to show him that he has changed only the name of the account and has not in any way altered its nature as an asset, unless he has at the same time opened a contingent reserve account on the other side of the ledger.

It is proposed to treat of these and other errors as they are reached in discussing the different phases of accounting involved in the conduct of an audit.

CHAPTER III

AUDITING SINGLE ENTRY ACCOUNTS

9. *Vouchers and invoices all-important.*—A single-entry set of accounts is one in which only one entry is made for any transaction and is really not entitled to be called a set of accounts at all. No attempt is made to reach a balance in anything but the cash-book, no accounts being kept with any assets or liabilities except memorandum accounts with debtors and creditors. For this reason it is usually said that it concerns itself only with the personal accounts. It is not necessary to keep a regular ledger account even with these. If a duplicate invoice is made for each sale, all the invoices can be filed alphabetically. When one is paid it is marked with the date of payment and transferred to a paid file. Those remaining in the unpaid file would represent the accounts receivable just as truly as if they were entered in a ledger. A similar treatment of invoices received from creditors would take care of the accounts payable. The cash-book is a mere record of receipts and disbursements, no distinction being made in regard to their character. The purchase of a boiler, which is an asset, is treated in the same way as the purchase of coal, which is an expense. A certain amount of cash is accounted for in either case, and that is as far as the accounts go. Naturally it is difficult to make an audit of such accounts further than to see that a proper voucher is on hand for each item of the disbursements. If a proper invoice is made for each

sale, approved by the shipping clerk, it is also possible to check up the cash sale and accounts receivable entries to see that all the goods that have left the house have been accounted for.

A statement of the net profit of the business for a given year may be made by ascertaining the net worth at the beginning of the year, that is, the total assets on hand, including customers' accounts, less the total of the amounts due to creditors. The difference between this net worth and that at the end of the year, made up in a similar manner, would be the profit or loss of the year, if the proprietor had not drawn out any money during the year. If he has, the amount of such drawings must be first deducted from the net worth in the beginning, the supposition being that he has used part of his original capital and allowed the profits of the year to accumulate. Of course, it will amount to the same thing if his drawings are added to the net difference, the supposition then being that he has drawn out profits as they accrued from time to time.

When the auditor has prepared such a statement of profits and a corresponding table of assets and liabilities, he has done all that he can do, in showing the total net profits and present net worth. But he has no way to show how the profits were made, nor can he make any comparative tables showing the different elements of cost and gross profits in two or more consecutive years so as to account for any increase or decrease in the net results.

It is true that an auditor can prepare a proper set of accounts from single-entry books by going over them in detail and posting the various items to the correct accounts on his own sheets. If he does this, he can draw off a trial balance at the end of the year, and pre-

pare a proper balance sheet, neither of which is possible from the accounts as they originally stood. But the auditor, in doing this, has rewritten the books in double entry and has entirely destroyed all the single-entry characteristics, and it is incorrect to say that he has made a trial balance of the single-entry books.

10. *Single entry useful in some kinds of business.*—While such a system of accounts would not serve the purposes of any business which is at all of a complicated nature, it is a mistake to say that it can never be useful. A small retail dealer who does business almost, if not entirely, for cash, can just as readily obtain all the information he needs in this way, as he could if he kept an elaborate double-entry set of books. This is equally true of those whose transactions are limited to the realization of definite assets and the liquidation of definite liabilities, such as would be the case with executors and receivers, unless their duties are complicated by the necessity of continuing the business of a testator or an insolvent. All that it is necessary for them to do is to prepare a proper inventory for the court showing the assets in their possession and the claims that have been filed against them. A cash account showing in detail how they have collected the assets and have distributed the proceeds among heirs or creditors can easily be checked against the original inventory. If the auditor does this, he can prove the accuracy of the accounts just as well as if a complete double-entry set of books had been kept. He must, of course, be careful to see that any interest, dividends or rents that should have been received are duly accounted for.

A produce commission merchant can use equally simple methods. All he needs is a book ruled with columns for the name and address of the shipper, de-

scription of the goods received, the party to whom sold, the price realized, the commission charged, the net amount remitted and the number of the check sent. As he remits at the close of each day, the transactions are all expressed by the cash received and paid. If he handles articles that are not quickly perishable and that can be carried over the day of receipt, he would naturally find the purely cash, single-entry system inadequate.

In the same way a renting agent can keep the simplest kind of accounts, as he needs only to have a rent-roll of the tenants and a cash-book to record his receipts and disbursements. The rent-roll is a mere memorandum register to show which tenants have paid. The statement to the owner consists only of a list of the rents received, with the expenses paid out on account of the property, and if a copy is kept, it is a sufficient record since each owner's account is supposed to be closed by a check to balance with each statement.

It must not be understood that this simple way of keeping the above classes of accounts is always to be recommended. In fact it is usually better to open a regular double-entry set of books. The idea sought to be conveyed is that they may be kept in this way and that the form of statement necessary may be made up from schedules and the single-entry set of books just as well as from a set that is more elaborate in method.

11. *Objection to single entry.*—The great objection to this system, if it can be dignified with the name of system, is that there is no way to prove the accuracy of the accounts, except by going over all the work again. Since no item balances against any other, there is no possibility of taking off a trial balance. An error, intentional or otherwise, will not be discovered except by

accident or after a systematic search, so that the opportunity is great for serious discrepancies, as in the case of the old-fashioned merchant who was surprised at the good results of his year's business and had spent a considerable sum in unwonted extravagance before he discovered that he had added up the year of our Lord among his assets.

CHAPTER IV

DOUBLE ENTRY

12. *A complex business demands double entry.*—As a business becomes complex and advances from conditions that are based almost entirely on the movements of the cash to those in which time becomes an element, or in which it is necessary to take cognizance of the varied sources of profit and loss, it is found that the single-entry method is inadequate. The element of time appears when goods are no longer bought and sold for cash, but on the basis of payment in the future, when recourse must be had to open accounts receivable or payable. This is still more important when long-time bonds are issued. It now becomes necessary to know how much is owing to, or by the business at any time, and to be sure that the figures are reliable.

The necessity for knowing the sources of the profit or loss appears when the processes of the business are complicated by division into departments, whether these are only the prime divisions into manufacturing, selling and administrative, or whether these are again subdivided to cover different classes of goods handled or different plants, perhaps widely separated. In such a business it is absolutely necessary that accurate statistics be kept in order that reliable information may be available as to the cost of the different processes either in a general way, or by a more or less elaborate cost system, so that by comparison between different plants or the same plant at different periods, leaks may be

located or economies introduced that will tend to the increase of net profits, which are the end and aim of all commercial transactions.

Not only must this information be obtainable, it must also be in a shape that will admit of proof of its accuracy, by the assembling of the figures in such form as will prove that no error has been made in their preparation. This can be done only by a system of double entry, which, as we shall see, demands an equivalent credit for every debit, and vice versa. As each entry balances against some other entry, the total of all the entries must also balance, that is, the net debits and credits of all the accounts; in other words, the balances on the ledger must themselves be in balance. This is shown by the assembling of all the balances in a table called a trial balance, in which the total of the debit balances exactly equals the total of the credit balances, thus proving the accuracy of all of them.

13. *Foundation of double entry.*—Therefore, it may be said that double entry provides for the keeping of an account with every element of the business; not only the personal accounts, but also the impersonal, such as merchandise, the various expense accounts and profit and loss.

The foundation of the double-entry system is that every debit is offset by an equivalent credit, and every credit by an equivalent debit; in other words, that every entry is absolutely and without exception a journal entry.

A great many rules have been formulated for journal entries, such as:

Debit whatever comes into the business or costs the business value; credit whatever goes out of the business or produces value for it.

Or this:

Credit	*Debit*
Decrease of assets,	Increase of assets,
Increase of liability,	Decrease of liability,
Increase of proprietorship.	Decrease of proprietorship.

Or:

Debit the account that receives the benefit, and credit the account that yields the benefit.

These rules are perfectly correct from an academic standpoint, but the difficulty is to remember the rule and to classify the entry to fit it.

It is claimed by some that an easier way to make an entry clear is to personify all the accounts, by saying that Mr. Merchandise is the person to whom is committed the custody of the goods in which we deal, and Mr. Cash the person to whom we pay or from whom we receive the cash that is involved in our transactions. This becomes a little too complicated for most persons when an attempt is made to explain some of the more intricate entries, especially in closing the books.

These and many other examples that might be given of the attempts to explain debit and credit, show to what length the authorities are driven in order to form a working hypothesis which will cover all the points of the subject.

14. *Debit and credit.*—The difficulty seems to be that they all start with a wrong idea of the fundamental principles. Thomas Jones, one of the first writers on the subject, said:

All debits are not sums owing to us, nor are all credits sums we owe. These terms are used arbitrarily, and any attempt to exhibit them in one uniform relation of indebtedness must necessarily oblige us either to use terms of corresponding ambiguity, or resort to the personification of things which not only have no

existence, but the indebtedness of which cannot possibly have any apparent influence on the end we aim to accomplish. In personal accounts they bear a literal meaning; and by analogy they have been extended to all other accounts; but the relations which constitute that analogy are too obscure to be of use as a guide to the student, and are more calculated to mystify than explain the subject.

Again, Charles E. Sprague says that bookkeepers call "all credit balances, liabilities, although they know that some of those balances are not liabilities. Even admitting that there is fictitious entity, it owes nothing to the real owners." He gives as the basis for determining whether an item is a debit or a credit six classifications, debit expressing an increase of assets, a decrease of liabilities or a decrease of proprietorship, and credit the three opposites of these.

It would seem as if these more or less elaborate attempts to define and explain debit and credit would be unnecessary, if we could find some method "to exhibit them in one uniform relation of indebtedness" which, as we have seen, Mr. Jones says cannot be done. In other words, if we can show that a debit is always something due to, and a credit always something due from the business, the problem will be greatly simplified.

To do this it is absolutely necessary to discriminate between the business and the proprietor who owns it. In speaking of this view of the matter Mr. Sprague says: "I cannot see that it justifies the inclusion of proprietorship among the liabilities. Surely the business does not stand in the same relationship to its proprietors or its capitalists as to its 'other' liabilities."

15. *Relation of business to proprietor.*—What then is the relation of the business to the proprietor? If A invests a certain sum of money in a business to be

managed by B under the name of B & Company, the distinction between A, the proprietor, and B & Company, the business, is plain. A would charge B & Company on his books, and it would be hard to make him understand that B & Company did not owe him the money represented by that debit balance. It is true that the account would not "stand in the same relationship" as other accounts that are of short duration, but that would not change its character as a debt. But if it is a debt on A's books, what magic is there in the word "capital" that changes its nature on the books of B & Company, except to classify it as the last debt to be paid, which is a difference in degree but not in kind. If this is agreed to, it seems equally true that when A invests money in the business of A & Company which he manages himself, he is acting in a dual capacity, as A, the capitalist, and A & Company, the business. If the latter business goes into the hands of a receiver, all that is left when the "other" liabilities are paid would certainly constitute a debt of the receiver to A and would be so treated and paid. The fact that A does not get any payment until every other claim is satisfied does not alter his status any more than the status of second mortgage bondholders as creditors is altered by the fact that there may be only a partial payment to them possible after the first mortgage bonds are paid.

If the capital is acknowledged to be a debt of the business, our next concern would be with the nominal accounts, such as rent, wages and expense. That these are debts due to the business by the proprietor arises from the fact that the business is managed for account of the proprietor, who must eventually pay all its outgo and receive all its income. When the manager has expended various sums for rent, wages, etc., he is entitled

to present a bill to the proprietor as an indebtedness of the latter to the business. The proprietor, while acknowledging the indebtedness, tells the manager that, since the actual money is not needed, he can charge the items to his account, but for statistical reasons to do so, not in one general account, but in different ones, such as "proprietor for rent," "proprietor for wages" and so on. The manager, for the sake of brevity, drops the name of the proprietor and keeps the accounts as rent, wages, etc. When the gross profits are ascertained at the close of the fiscal period they unquestionably belong to, are owed to, the proprietor, and the profit and loss statement is simply the statement of the proprietor's account with the business in which, as in every other personal account, the debits and credits are offset, and only the balance is accounted for. That this balance is really a debt due by the business to the proprietor is shown by the fact that the latter can demand every cent of it in cash. That he allows it to be added to his original credit in a personal business, or in the case of a corporation allows it to be credited to a new proprietorship account called surplus, does not in any way alter its character as a debt of the business to him.

In the personal accounts, any item for which payment can be demanded from any person is a debit, any item for which payment can be demanded by any person is a credit. In the impersonal, or nominal accounts any item payment for which can be eventually demanded from the proprietor is a debit and any item for which the proprietor can demand payment is a credit. No other touchstone seems to be needed to determine the true nature of any item.

The most severe test of this method of treating this matter would probably be formulated in explaining the

asset accounts, and yet it is reasonable to say that if the business invests money in a building, in machinery or in material for the account of the proprietor, the latter must owe the business for these things. If a reserve is set up for depreciation on building or machinery it must be a credit, for it is a payment due the proprietor for the use of the building or machinery, representing the loss of value to him consequent on such use.

In the same way any item may be satisfactorily explained if its real nature is ascertained. It does not seem an unreasonable thing to recommend the adoption of a theory which can be applied to every phase of a subject and fits them all.

16. *Every double entry a journal entry.*—The statement was made above that every entry in a double-entry set of books was a journal entry without exception. This is a fundamental rule and if it is thoroughly grasped, and lived up to, there will never be any danger of error. To understand it, it is necessary to trace the development of bookkeeping methods from the very beginning of the double-entry system.

At first the journal was, what its name implies, a day-book. Each transaction was separately detailed in it, in journal form. Each receipt of cash was represented by an entry of "Cash to A B," "Cash to C D," and so on, and each item of cash was posted separately to the ledger account. In the same way every item of outgo was debited and cash credited.

The first step in advance was the assembling of similar items each day so as to make one credit or debit entry on one side and sundries on the other, such as "cash to sundries," to show the total receipts of cash each day. The next step was the assembling of these similar items by devoting one or more pages of the journal to each,

and changing the posting of the single term of the entry from a daily to a monthly one. The next step was an obvious one. Instead of devoting several pages of the journal to cash entries a separate journal was employed for that purpose, and since all the items in this book involved cash, it was no longer necessary to adhere to the strict journal form. For a long time, however, it survived in the habit of beginning every entry on the left hand page with "To" and every one on the right hand page with "By." It is understood that a journal entry can be made either in the ordinary form of "Cash dr. to Sundries cr.," or as "Cash cr. by Sundries dr." This explains why credits to accounts in a cash-book are at the left and debits at the right, for if the whole entry were made, the left hand page would be "Cash to Sundries," in which cash would be in the left hand column and sundries in the right hand one. While we are posting from the left side of the cash-book to the right side of the ledger, we are really posting from the right hand column of the page, the left hand column being eliminated as useless. The journal entry is completed at the end of the month by posting the total of the left hand page to the debit of the cash account on the ledger. The same principles apply to the other side of the cash-book.

The next step was probably the elimination from the journal of the sales by the adoption of the sales book, the true journal nature of which would be at once recognized if the proper heading were placed at the beginning of each month of "Sundry Customers To Sales." If the purchase record were headed "Sundry Accounts Payable" by the names of the accounts shown in the distributive columns, the journal feature would again be apparent, as it would in all the subsidiary

books, however complicated they might at first appear.

17. *Journalizing all entries.*—It is customary in some houses to bring all the business of the month into the journal by summaries, and to post everything that belongs in the general ledger from the journal entries. There does not seem to be any good reason for this, if the subsidiary books are kept in any reasonably proper manner. For instance, if the purchase record is kept on the plan of crediting each creditor with the goods bought from him, such credits are posted directly from the record, and there does not seem to be any reason why the offsetting debits in the distributive columns should not be posted directly from the same book to the respective accounts in the general ledger. This is especially true of the practice of journalizing the cash which a number of bookkeepers follow. To copy all these entries in the journal necessitates duplicating the work, and where a journal voucher is used, triplicating it, without any apparent advantage and with the risk of error in copying it. To say that it is well to assemble all the transactions in the journal is to lose sight of the fact that the cash-book, and all other books of original entry, are themselves journals, and that all of them together are one journal, bound in separate covers merely as a matter of convenience, and with the journal idea somewhat obscure to the superficial observer on account of the suppression in most of them of one or the other half of the journal entry in its distinctive form, though it appears in reality when the totals are posted to the ledger.

CHAPTER V

METHODS OF AN AUDIT

18. ***The cash.***—Having acquainted ourselves with the general characteristics of the subject with which we are to deal, we can proceed at once to the consideration of the methods to be adopted in carrying out the details of an audit.

As an audit consists of the verification of the accounts as they are, or as they should be on the books, at the time when the audit is made, we naturally start with the item which varies the most from time to time, that is, the cash. The first thing for the auditor to do, is to verify the cash on hand in the drawer or safe, unless the office is sufficiently systematized to have adopted the method of depositing all receipts in bank every day and of paying everything by check. If he finds checks in the cash he should note whether they are current or old ones that have either been thrown out of bank, marked "not sufficient funds" or have been cashed for some officer, employee or friend and held as an accommodation. If the checks are all current he should examine the cash-book to see whether the parties from whom they were received have been given credit for the proper amounts. If not, the checks must be doing duty for entries to which they are not applicable and there is a corresponding shortage in the cash.

If the proper system of handling the incoming cash, and the petty cash is followed, it will be sufficient at first to verify only the petty cash and afterwards to

reconcile the bank account, for which purpose it is better to have the pass-book balanced specially and delivered directly to the auditor by the bank. This is not imperative when the last bank statement shows no signs of having been altered or manipulated in any way.

A proper system of handling the cash requires that all the mail shall be opened by someone other than the cashier. This person should be provided with an ordinary one-column blotter in which all remittances received are entered with at least the initials of the remitters. The letters and enclosures are then passed on to the cashier and bookkeeper. If there are any cash sales made they should be recorded on a duplicate register, the key of which is held by the person keeping the blotter of receipts. When the deposit is ready for the bank, this person ascertains the amount of cash shown by the register, enters it on the blotter, compares the total of that book with the deposit slip, initials the slip, and again compares the entry in the pass-book when it returns from the bank. This is the most effective way of preventing the carrying over of a shortage by holding out money one day and replacing it out of the receipts of the next, which is one of the most difficult things to detect when no such precaution is taken. This method will prevent it absolutely, unless there is collusion between the cashier and the keeper of the blotter. Collusion of this kind is very rare, so rare that it is almost entirely a negligible item. The auditor has done his duty if he has provided a system which can fail only through such collusion.

19. *Precautions for guarding cash.*—It is sometimes recommended that the cashier be required to take an impression copy of his deposit ticket before going to bank, but a little reflection will show that this precau-

tion is valueless since there is nothing to prove that the ticket copied is the one actually used in making the deposit. In cases where holding over or "lapping" is practiced, the cashier deposits a check received from A, and does not credit A on the cash-book, but abstracts an equal amount of currency for his own use. The next day he enters A's credit on the cash-book, but neglects to enter anything to the credit of B, whose check is used in the deposit to offset A's credit. Since the two checks are seldom of exactly the same amount a scrutiny of the deposit ticket that is actually used in the bank would disclose the discrepancy. But if the cashier makes up a deposit ticket that exactly corresponds with the items on his cash-book for the day and copies it in his impression book, it is an easy thing to make another ticket for the bank which contains the actual items that he deposits, the total being made to agree with that of the copied ticket by the addition or subtraction of the small amount of currency necessary to create the equilibrium.

Dicksee recommends the use of counterfoil receipt blanks consecutively numbered, which, however, he says are not an infallible preventive of fraud, though he does not say why. If the counterfoil consists merely of an ordinary stub, it is manifest that there would be no way to insure that the record on it was in any way descriptive of the receipt. It differs from the stub of a check-book, since the checks are eventually returned and can be compared with their respective stubs, while the receipt would never be returned except in the rare case of a disputed payment.

If the counterfoil takes the form of a carbon copy, it is equally capable of manipulation. It is only necessary to place a card under the receipt when it is origi-

nally written so that no mark will be made on the duplicate, and then to place over the carbon a piece of blank paper on which an entirely different receipt may be written, to obtain a "carbon copy" which is absolutely unlike the original.

Not only must auditors be constantly on their guard against being deceived by too blind a reliance on what looks at first sight to be an infallible safeguard, but office managers should realize the folly of depending too implicitly on precautions that are by no means perfect, especially since the existence of the precaution may give them such a false sense of security that they may neglect to exercise ordinary vigilance in the supervision of the cashier's accounts.

20. *A plan for the record of incoming funds.*—This method of making a record of incoming funds may be made to save a large amount of clerical work in an office of considerable size. The manager's stenographer may be furnished with blanks in triplicate, ruled with columns for names, addresses, description of funds (local checks, New York drafts, money orders, etc.), actual amount of remittance, cash discount, freight deducted, allowance claimed and any others called for by the business. As the manager opens the letters he may pass over to the stenographer those which contain remittances, together with the enclosed funds. The stenographer then enters the items on the blanks with the typewriter, gives the original with the letters to the bookkeeper and the duplicate with the funds to the cashier or treasurer, and retains the triplicate. The bookkeeper posts directly from his copy and when he has verified all the entries, compares the total with the treasurer, who then enters the total in his cash-book as one item. The blanks must be so made as to be capable

of being filed in binders by each one of the three and carefully preserved, as they are in reality books of original entry, portions of the cash-book.

In any well-regulated office it is essential that all the receipts shall be deposited in bank, so that the debit side of the cash-book shall exactly equal in amount the entries on the bank pass-book. This can be shown on the cash-book by having a special column for the bank deposits, which will equal the sum of all the other receipt columns, or by having the first column contain the net cash representing each receipt, proving the equality with the bank book by adding them both up to date. It is better to deposit each day's full receipts as a total, but if not advisable or possible in cases where mails received after banking hours contain considerable remittances, a mark on the cash-book should show the point down to which the items had all been deposited. If items are entered on the cash-book on the last day of the month after the deposit has been made those items should be made up in a specific deposit the next morning and the pass-book should then be left to be balanced before another deposit is made. The reason for this is obvious. The movement of the cash is identified with the bank account each day, making it possible for the auditor to verify it by comparison with the bank statement, or with the pass-book, if the statement method is not used by the bank. In order to make a thorough test of the identity of the items purporting to have been deposited, the auditor should obtain from the bank copies of the actual deposits made on days selected at random, and should compare the items with the entries on the cash-book.

21. *Disbursements of cash.*—As all the receipts are thus required to be deposited in bank it is necessary to

so arrange matters that all payments shall be made by check and that every check shall be shown on the cash-book. This is an easy matter with all the larger disbursements. To cover the smaller ones, a petty cash fund should be created by drawing a check to the order of the cashier for a round amount, determined by the needs of the business, and charging it on the ledger to petty cash account. When this check is cashed the money is kept entirely separate and a petty cash-book opened containing columns for carfare, telegrams, express and other items that it may be thought best to classify. All cash payments are made out of this fund and no payments are made out of money that is received for cash sales or other receipts, except that checks may be cashed out of such funds, and deposited in lieu of the cash they replace. When the petty cash fund is nearly exhausted the cashier makes a regular bill or voucher against the house, the same as if he were an outsider, containing as items the totals of the various columns of his petty cash-book. This is presented to the officer or partner who draws checks, together with the petty cash-book and any vouchers that there may be. This party issues a check to the cashier for the exact amount of the bill and also initials the book. When this check is cashed by the cashier the fund is restored to its original size and the process is ready to be repeated. At all times the cashier must have in his petty cash box and in his book the items which together will represent the total amount of the fund. The disbursements represented by the check are entered on the main cash-book in the same manner as those represented by any other voucher. This is called the "Imprest System." This is a far better method than returning to the main "cash"

the unexpended money at the end of the month, or than keeping a running account with "petty cash."

In cases which sometimes occur where checks are given in exchange for currency or drafts, the check should be entered in its regular order on the disbursement side of the cash-book and the currency or draft on the other side, and both items marked "contra" in the folio column, showing that they are offsets and are not posted to any account. In this way the check is accounted for and the currency or draft is included in the deposit. Nothing is so perplexing to the auditor as to find checks issued and paid, for which no entry appears on the cash-book and the only explanation for which is a note on the stub that it is issued against currency furnished by so-and-so, or in exchange for a New York draft from such and such a customer.

In the case of checks cashed out of the receipt funds no entry is necessary, as the checks take the place of the currency in the deposit and there is no more disturbance of the routine than occurs when small bills are given in exchange for a larger one. If the check cashed is one issued by the house itself it should be deposited just the same as any other. When it is an outside check, it is well to make a note on the stub of the check book of the name of the person for whom it was cashed together with the amount and the bank on which it is drawn, so that it may be traced if it should be lost.

22. *Due-bills in the cash.*—When the cash is not kept in this way the nominal amount in the office is sometimes found to be very large. In such cases it is often discovered that it consists very largely of due-bills and other cash memoranda. The auditor should list these and in his report should specify the amounts and the

names of the parties for whom they are carried. If the latter are officers or employees it should also be noted in the report whether the due-bills are covered by salaries earned but not yet due, or whether they are advances on salaries yet to be earned. The practice of carrying due-bills in the cash is a vicious one and should always be condemned by the auditor, even where it is indulged in by the head of the office, or rather all the more when such is the case, for when persons in authority commit irregularities the whole office is apt to be demoralized.

It is sometimes customary to carry small unadjusted items in the cash until their disposition can be determined. It is such a desirable thing to have a perfectly clean cash record that it is certainly worth the little trouble that would be caused by charging such items to a temporary suspense account and thus keeping them out of the cash drawer.

23. *The bank account.*—If all the receipts of cash are deposited in bank, in the manner already indicated, there is a sufficient internal check on the accuracy of the bank account. If this is not done, however, the requirements of an audit are not all met by ascertaining that the present balance in bank corresponds with that called for by the cash-book, due allowance being made for the outstanding checks and other items that enter into the reconciliation table. The bank account may be exactly right at the beginning of the year and again correct at the end and yet may not have been correctly stated on any other day of the year. Money may have been abstracted and used for nearly the whole time and replaced temporarily in anticipation of an audit. Items left for collection may have been paid and no entry made for them on the books, or any one of several systems of kiting may have been indulged in on the last day of the

year to cover a shortage that may have existed for a long time. It is imperative, therefore, that sufficient tests of the accuracy of the bank account at different periods during the year should be made by the auditor to satisfy himself that there has been no manipulation of it.

If debit and credit columns are carried on the cash-book in which the deposits and checks are recorded, the stubs of the check-book can be dispensed with, as unnecessary duplications. Care must be exercised to insure the proper recording of a check on the cash-book before it is allowed to go out of the office, unless, as is sometimes the case, a carbon copy of the check is retained. The difference between the two bank columns will, of course, show the balance in bank.

24. *Reconciliation of bank account.*—The auditor should make a reconciliation of the bank account and keep a copy of it among his papers. In all audits except the first he should work from his previous reconciliation table, checking the items in it that have since been taken up, and carrying forward those which have not been. The ordinary form of a reconciliation statement starts with the balance as shown by the bank; lists the outstanding checks, deducts the total from the bank balance; adds any charges for telegrams, interest, etc., which are on the bank's books, but are not yet on the cash-book; and deducts any collections or other credits not yet entered on the cash-book. The result should be the balance shown by the cash-book. Where the account is very complicated, a more formal method is advisable, one divided into four tables: (1) We debit, bank does not credit; (2) we credit, bank does not debit; (3) bank debits, we do not credit; (4) bank credits, we do not debit. Starting with the bank's balance (1) and (3)

are added, and (2) and (4) deducted to make the cash-book balance. Or a tabular statement can be made in this form:

Bank's Balance	Our Balance
Add (1)	Add (2)
Add (3)	Add (4)

the two sides of which should balance.

This tabular form of reconciliation should be used in balancing any sets of accounts between two parties, when the reciprocal items are so numerous as to make the process complicated, as for instance, between the home office and a branch, or between stock brokers in two different cities, who are constantly buying from or selling to each other.

25. *The cash-book.*—The usual form of a cash-book carries the receipts on the left hand and the disbursements on the right hand page, but sometimes the receipts are carried in one book and the disbursements in another, in which case the pages are continuous. This is especially advantageous when either side contains only a very few items compared with the other, so that one page of an ordinary cash-book will be almost blank, while the other is entirely filled up. The disadvantage is that it is necessary to refer to both books in order to ascertain the cash balance. In a large business, that is sufficiently subdivided, this would not apply, as the actual cash account would then be kept on the treasurer's books.

26. *Columnization.*—The columns in a cash-book depend on the nature of the business. There should be a column for general accounts on each side, one for accounts receivable on the left, and for accounts payable on the right-hand page. Any payments for accounts receivable can be put in the general column, as they are

few in number. Special columns for cash sales or purchases of merchandise, for general expense or any other class of items that may be of frequent occurrence may be provided. "Cash discount" can be treated in either of two ways. In one case the amount of cash actually received is entered in the accounts receivable column and the discount in its appropriate column, both amounts being posted to the credit of the customer. The discount column in this case does not enter into the cash balance at all, the entries in it being really journal entries. When the whole amount of the bill is entered as paid and the cash discount is carried as an element of the cash balance it can still be carried in the same column by heading it "discount, debit account," and carrying it to the other side of the book at the end of the month where it will enter into the cash balance at the closing of the cash-book for the month and where it will be in the proper place for being posted to the debit of discount account. In the same way the discount taken on accounts payable paid is placed in a column headed "discount credits," although on the wrong side and is transferred and posted in a similar manner. The advantage gained is twofold, the saving of rewriting of the names in the journal or cash-book and the bringing together of the bill paid and the discount on it in close proximity where they can be compared, making it less easy to manipulate the books for small amounts through this account. Where customers are authorized to deduct freight from their remittances in any considerable number of cases a column may be carried for this item in the same way.

This idea is sometimes carried out to such an extent that a combined journal and cash-book is made with columns for all the principal accounts including debit

and credit columns for cash itself. It is not advisable to carry this idea of columnization too far in a cash-book, so as to include all journal entries on a compound journal cash-book. There are too many opportunities for covering up counter entries by making a journal entry take the place of one which was really cash. It is a very convenient form for the bookkeeper, especially if there is a column for each one of the principal accounts, but the entries on it are not nearly so easy to trace as those on the ordinary cash-book, and therefore it is not usually looked upon favorably by auditors. There is not so much objection to it in case a voucher is furnished for all journal items, as well as for those involving cash. Ordinarily a bookkeeper who may be very careful to require written authority in the shape of a voucher of some kind for the disbursement of even a small amount of money, will make a journal entry at the verbal request of any one authorized to give him instructions. But a journal entry may be as important as one on the cash-book and may involve as serious consequences. If the bookkeeper can smuggle into the journal a credit to a customer for returned goods, for allowances or for anything else, he can retain an equal amount from the cash payment made by that customer.

In the soft coal business, for instance, the freight is often more than the cost of the coal at the mine. The coal is sold delivered to its destination, the shipper assuming the freight. For convenience the receiver often pays the freight, sending the receipt with his check to balance to the shipper. On the books of the latter the customer is credited with the check through the cash-book and with the freight through the journal. One young man who was keeping books for a mine allowed his freight entries to lapse for considerable time and then

made them all at once in totals with no details. When his books were examined the accountant took the tonnage shipped to each customer for the period, calculated the proper freight, compared the figures with the journal entries and discovered a defalcation of over seven thousand dollars. The bookkeeper had made part of the freight credit do duty for a corresponding amount of cash which he had abstracted. The auditor's attention was attracted to the peculiarity of the absence of freight entries for several months and then of their being all made at once in lump sums, and the inquiry into the anomaly caused the discovery of the defaulter's method.

27. *Loose-leaf cash-book*—Whatever arguments may be urged for the use of other loose-leaf books, it seems impossible to justify the employment of any but a regularly bound cash-book. While the entries in a bound cash-book may be falsified, there is always risk of detection, which may be absent if a whole page may be abstracted and another one substituted for it containing entirely different entries, provided the totals forwarded at the foot of the page are the same. It is doubtful whether a loose-leaf cash-book would be admitted in evidence by a court, as there is nothing to indicate that entries were made at the time they are dated, and in the regular course of business. There is really no advantage gained by their use commensurate with the risk that is incurred and, therefore, their employment is seldom or never recommended, except by those so-called accounting concerns who are more interested in the sale of expensive blanks than in furnishing to their customers a system of accounts suited to the business.

CHAPTER VI

BILLS RECEIVABLE

28. *Definition of bills receivable.*—While the term "bills receivable" is almost universally understood, it would perhaps be better if it could be replaced by the more accurately descriptive term "notes receivable," on the ground that in this country, when a person gives his written promise to pay a given amount, the document is invariably referred to as his note, while a bill is the creditor's statement in writing, specifying the amount and character of his claim in detail.

The use of the word "bills" arose from the English custom of drawing on a customer a bill of exchange due as many days after sight or date as the terms of the sale warranted. When this bill was accepted, it became a "bill receivable" and this term was extended to cover the few instances in which a note was given. The bills are sometimes called "trade acceptances," but this term alone does not distinguish between items which are receivable and those which are payable.

In old times in this country the English custom of drawing on a debtor on long time used to prevail, but it has gradually been given up in our domestic trade, so that the ordinary business man now thinks of a draft on a customer only as of one at sight, or a very few days sight, drawn on a debtor whose account is overdue and who may pay a draft to save his credit at his local bank, or who will remit if threatened with a draft. It is still the custom, however, to draw on foreign debtors at sixty

or ninety days sight, especially when the draft is accompanied by bill of lading.

When the bills receivable taken in a business are considerable in number, there should be a separate register for them. The most convenient form for the usual business house has a page or more for each month of maturity. The notes taken each month are listed on the pages of the months in which they mature, and the totals of these pages for each month in which they are taken are added together to show the total taken that month. The individual items are posted to the credit of the individual customers and the total to the debit of "bills receivable" account.

29. *Bills receivable discounted.*—When bills receivable are discounted in bank or paid over to creditors in place of cash, they should not be credited to "bills receivable" account, but to "bills receivable discounted." Although the note has been realized upon for virtually the same amount as if it had been paid, there still remains a liability for its face if it is not really paid at maturity. While this is only a contingent liability, it is none the less a real one, and should be expressed on the books. A reasonable time after a note is due, if it has not been returned unpaid, a journal entry should be made charging "bills receivable." On the balance sheet the items would appear as "bills receivable" on hand, in an inside column (or "short") and under it "bills receivable discounted," the total of the two being extended into the assets column. On the other side there would appear the amount of "bills receivable discounted," as a contingent liability.

30. *How to ascertain a customer's liability.*—When a customer gives his note, it is usual to credit his account and charge "bills receivable." The result is that his

debit balance is either extinguished or at least reduced. Since it may be advisable to know what his total indebtedness is, in order to determine how much further credit to extend to him, various expedients have been adopted to show how much his unpaid notes amount to. As simple and effective a way as any is to carry in an inside column on each side of his account a memorandum account with his notes. That is, when he is credited with his note in the regular column, he is charged with it in the memorandum column. When the note is paid it is credited in the memorandum column. The balance shown in the regular column is his liability on open account, and the balance of the memorandum column is his liability for notes not yet due and paid. Both balances being on the same account are easily referred to, but of course only that in the regular column appears in the trial balance.

31. *Verification of bills receivable.*—The auditor should verify the bills receivable on hand by a comparison of the actual notes with the register, careful note being made of those that are past due. These should be charged to "suspense" much more promptly than open accounts, as from their nature they should be much more promptly paid. The notes which have been sent out for collection should be represented by the acknowledgment of the banks to which they have been sent. In auditing a bank the auditor should send out carefully worded notices to the parties purporting to have signed any notes above a certain amount, asking them to report if the notes are not regular, as the great danger in a bank is that dummy or forged notes may have been used by some officer to raise money for his own purposes.

32. *Calculation of interest—the "tickler."*—In the

ordinary business house the interest on bills receivable is not usually taken into account at the end of a fiscal year or at any other time when a statement is made of the condition of the business, for it is usually too small an item to be worth taking into consideration. In recent bank statements, however, the item of unearned interest on notes has appeared as a liability. At first sight it would seem like a tremendous task to calculate the interest on all the notes in a large bank, but it is easily found, with perfect accuracy, by the use of the "tickler." This is a book containing a list of all the notes on pages representing the dates of their maturity, or due dates. These pages are already added up to prove their accuracy by comparison of their totals with the notes account on the general ledger. It is only necessary to treat each day's total as one note to reduce the number of interest calculations in the largest bank to about one hundred and twenty, as banks seldom have notes running beyond four months. If interest is paid regularly at fixed times on demand paper, the total of all the demand notes can be taken as one item with interest from the last regular payment day, leaving only the demand notes taken since, to be treated as separate items. Of course, the interest due on the demand notes would be an offset against the unearned interest on the time notes, the difference being the net unearned interest as a liability.

If it is desired to ascertain the amount of unearned interest on notes in an ordinary business the form of note register already suggested makes it easier to do so as the notes are there listed as to their maturity.

33. *Accounts receivable.*—The term "accounts receivable" is open to the objection that it is often made to cover all debts due by persons, whether they are cus-

tomers or officers and employés of the company. While accountants attempt to restrict the term to customers' accounts, their action does not bind the bookkeeper or officer of a company, who can thus make up a statement that is deceptive and yet is in a sense correct. If accountants were uniformly to use the title "customers' accounts," the business public would become accustomed to it and would learn to look with suspicion on the more comprehensive term. The English term "trade debtors" is really better than either of the others, since it allows the use of the similarly restricted term, "trade creditors," in place of "accounts payable." If either of the suggested expressions is used, no bookkeeper could include in the items covered by it any debt due by an officer or employé, except those legitimate ones which arise from purchases made by them, without making himself liable to the charge of a deliberate intention to deceive.

These accounts should be kept in a separate ledger or at least in a separate division of the ledger, if only one be in use. In the general ledger an account is kept in total with the customers or accounts receivable ledger, which is called in England an adjustment account, and in this country a controlling account. Neither name is quite so good as "representative account," since this account represents in totals all the items that enter into the individual accounts on the subsidiary ledger. One of the best illustrations is found in bank bookkeeping where the "depositors' account" on the general ledger represents the total of the accounts on the individual depositors' ledger.

In order to carry the controlling account on the general ledger it is necessary that the books of original entry shall have columns for the detailed items per-

taining to the accounts, so that the totals may be posted to the controlling account. As the charges to customers from the cash-book are very infrequent, however, it is not worth while to have a column for them, provided it is borne in mind that such items must be posted twice, once to the individual account of the customer and again to the controlling account. The same would of course be true with regard to receipts of cash from accounts payable.

34. *Debit balances of officers and employés.*—Reference has already been made to the cases where there is found listed among the accounts receivable the debit balance of an officer or employé of the company, usually an overdraft against salary as yet unearned. Such items should be very carefully inquired into, with a view to finding out whether the party has means other than his salary out of which he can make the amount good, if called on to do so. In making up the balance sheet or the condensed statement of ledger balances these items should not be included among the ordinary accounts receivable, but should be given an independent showing, since they are not legitimate book accounts like those arising from the sale of goods in ordinary course of business. Such overdrafts may be permissible occasionally when the parties are stockholders and there is a prospect of a dividend in the near future to take care of them, but as a rule they are a poor class of assets and should be discouraged as far as possible.

35. *Doubtful accounts.*—In taking off the accounts receivable for the trial balance, they should be listed in at least three columns, according as they are current, a short time past due or so far delinquent as to be considered doubtful. Accounts in the hands of attorneys for collection should be taken out of the accounts re-

ceivable entirely and placed in suspense, along with those of parties who have failed. Against the suspense account there should be carried a special reserve or contingency account of a size sufficient to cover whatever proportion of the suspended items their character would seem to necessitate, usually 25 per cent of the items of the current year, 50 per cent of those that are two years old, 75 per cent of those three years old, while all of those four years old should be charged off. By charging these percentages to profit and loss and crediting them to the contingent reserve account, the suspense accounts of each year are left on the books at their face value. There they can be looked after and yet they are not carried as assets for more than they may fairly be considered worth. The percentages will vary in different lines of business, according to the character of the customers. For instance in a house selling largely to clergymen the proportion of slow accounts is large, but eventual loss is very small. The moral risk in that case is considerably less than the mortuary one. When a payment is made on a suspended account it is the practice of some houses to reverse the entry that transferred the account to suspense by re-crediting suspense and charging the individual account again. The cash received is then credited to the individual account and the new balance is thrown back into suspense again by a journal entry. This is, of course, for the sake of keeping track of all the entries on the individual account. It is not necessary if a separate suspense ledger is opened with an account for each delinquent.

No fixed rule can be laid down for the classification of accounts receivable so as to determine when they become doubtful or desperate. The time depends on the character of the business. Supplies from produce com-

mission houses must be settled for within a week, while bills due to a tailor are not necessarily doubtful when they are over six months old.

In classifying the accounts as to age, the terms of the sale must be taken into account, if any of them have been sold with a future dating, for if such is the case the account is not past due until that date is past, although several months may have elapsed since the day of shipment.

A mistake that is often made in the treatment of suspense items is the neglect to provide the credit to "reserve for bad debts" against them. It is a very common thing to find these charged to a "suspense account" which is still carried on the balance sheet as an asset and, therefore, is included in the profits. Many a business man prides himself on his conservatism in promptly charging past due accounts to suspense, and it is often difficult to show him that he has changed only the name of the account and has not in any way altered its nature as an asset, unless he has at the same time opened a reserve account on the other side of the ledger, offset by a corresponding charge to profit and loss.

36. *Reserve for bad debts.*—In preparing a revenue account at the close of a fiscal period, the liability for loss from bad debts should be expressed by the auditor, unless it has already been taken care of by the prompt charge of every doubtful account to suspense and the setting up of a reserve account against it. He must do this by a debit to profit and loss and a credit to reserve for bad debts for such a percentage of the accounts as the experience of the business would seem to justify. Some say that this percentage should be on the amount of the total sales for the year, others that it should be on the balance due from customers at the

end of the year. Either method is logical, as the risk of loss is evidently proportioned to the amount of sales made and also to the amount still unpaid. The auditor is concerned only with insisting that one of them shall be adopted and that the reserve shall be adequate.

When such a reserve for bad debts has been set up at the end of a year, the actual losses during the next year are to be charged against the reserve and not to profit and loss. The reserve was the estimate of the probable loss. Charging the actual loss to it is simply expressing the result of the estimate, and proving its accuracy or the reverse. Any errors made in it will be adjusted at the end of the year when the new reserve is set up.

General business conditions should be taken into account by the auditor in recommending the amount of the reserve. In the same business, with the same general line of customers, the losses from bad debts will often vary largely in years of business depression as compared with prosperous periods.

37. *Proving up.*—In auditing a set of books it is not usual to do more than prove up the accounts receivable as a whole. The accounts payable are proved in the same way, where the books are kept in a proper manner. In such a set of books, where the three classes of accounts are kept distinct, it is a very simple matter to prove out the accounts receivable and payable, especially if a controlling or representative account is carried for each of them in the general ledger. In the ordinary cash-book and journal where all classes of accounts are entered in the same column, it is necessary to resort to the process of building up each class of accounts. When all the general items have been checked to the ledger, we eliminate all items so checked. If

the accounts receivable and payable are mixed on the pages of the ledger it will be necessary to prove them out as a whole. Starting with the net balance at the beginning of the period, we charge it with the total of the sales for the period, less any sales that we may have found charged to a general account, such as would be the case if one of the partners or officers had bought any goods which were charged to his drawing account. We also charge any journal debits, and debits from the cash-book. We credit it with the total receipts as shown by the cash-book after deducting therefrom the general items as shown by the check marks, with the total of the returned merchandise book, if such a one is kept and with cash discount, if that is carried in a column and the cash is entered net. The resultant balance should be the net balance of the accounts on the ledger, which we proceed to prove by adding the ledger from the last balance to the present one. It is very common for an auditor to check the trial balance taken off by the bookkeeper, noting the starting balance as well as the ending one, but some auditors prefer to make their own balances, putting in the pages but not the names, and proving from their own previous balance to the new one, and there is no doubt that this is the safer plan, as it prevents the changing of a balance after an audit has been made.

By this method it will be seen that the accounts receivable and payable are not checked individually at all, but this is not necessary for the purpose of a thorough audit. It will not detect an error in charging or crediting the wrong party, but such an error can safely be left for correction to the person who will receive a statement with too little credit or too much debit. It sufficiently proves that all the debit items have been

charged and all the credit items credited to someone on the ledger.

As an absolute proof of the accounts receivable there is no method better than for the auditor to mail the monthly statements himself, accompanied with a request that any discrepancies be reported at once to him on a blank enclosed for that purpose. This is frequently done in England but is not so customary here, except with the national and state bank examiners, in checking up the accounts of the correspondents of the bank they are examining. Commercial houses are not accustomed to receiving these notices and are apt to misunderstand them and even to take offense at them.

In sending out these statements they should not be enclosed in envelopes bearing the return request card of the company or firm, but in envelopes with the address, though not necessarily the name, of the accountant. The reason for this is that if there has been any manipulation in certain accounts, the bookkeeper can furnish false addresses, the result being that the statements will be returned to the office of the company, where the bookkeeper can gain possession of them and destroy them, having in the meantime sent the corrected statements to the proper address.

CHAPTER VII

INVENTORIES

38. *Responsibility of the auditor.*—The responsibility of the auditor for the correctness of the inventory figures, that he uses in making up his statements, depends somewhat upon the nature of his contract with his client. He is sometimes employed to take the inventory himself, in which case he assumes complete responsibility for it. Usually, however, he is not expected to do more than satisfy himself that it has been correctly taken by parties familiar with the business who can be relied on to report the actual quantities on hand. The ordinary foreman is usually such a person. If left to himself he will make as correct a count as is possible, and he will ordinarily be left to himself, as few employers would care to put themselves in the position of asking him deliberately to falsify his report. The auditor, being thus reasonably sure of the correctness of the count, should examine the prices in connection with the invoices of purchases, to ascertain the basis of the valuation, and should prove the extensions in order to detect careless or willful errors. Unless errors in either valuations or extensions are discovered after thorough tests have been made, it is not generally considered necessary to prove every item.

39. *Raw material.*—The word "inventory" is usually applied only to those assets that are constantly changing or moving. Among these is "raw material," which is any material that enters into the product of a factory

while it is still in the condition in which it was purchased and before any work has been done on it by that factory. The finished product of one factory may be the raw material of another. For instance, pig-iron may be made into boiler plates in one factory, these made into boilers in another and the last used in ship-building in another. The pig-iron, the plates and the boilers emerge from one factory as finished product to enter another as raw material.

40. *The market price.*—A custom which may lead to serious error, but which is frequently defended by manufacturers who indulge in it, consists in inventorying raw material at the market price when that is greater than the actual cost. It is claimed that the advance in price is a legitimate profit of the year in which it occurred, and the profit and loss account is given credit for it, while it remains as only a possible profit in case the market does not react before the material is made up and sold. The broad principle should be adopted that no profit can be depended upon unless the goods are actually sold, and that in the meantime the material should be carried at not more than cost. On the other hand, when the market price of the raw material has dropped since its purchase, the conservative man will carry it at the lower price in the inventory. In other words the advice usually given by the careful auditor is to carry the goods at whichever price is the lower, the original cost or the market rate. If this is an error, it is certainly one on the safe side, and if there are any surprises in store for the man who follows it, they will prove to be pleasant ones, while the other course may lead to consequences that will be disagreeable if not disastrous.

41. *Freight costs.*—The cost of getting the material into factory is a legitimate part of its value in the in-

ventory. Freight is one element of such cost, consequently "freight in" should always be kept separate from "freight out," the former being part of the cost of the material, while the latter is a selling or trading expense.

It is hardly necessary to say that the auditor must take precautions to prevent the inclusion in the inventory of any material that has not been paid for either in cash or by credit to the persons from whom it was purchased. Equally careful must he be to see that no goods held on consignment only are included. They should always be separately listed both as to the goods themselves and as to the credit account which offsets them.

42. *Product in process and finished.*—As soon as any work is done on raw material it becomes "product in process of manufacture," and the cost of the work done is to be added to its value. This is called "earned shop cost" and increases with each process until the goods reach the shipping room, when they are "finished product."

In an inventory of finished or partly finished goods nothing should be put down at a higher figure than its actual cost. The cost will include all the elements, direct and indirect, that have so far entered into the production of the finished goods or those in process of completion. The practice of listing finished articles at the selling price less the supposed cost of selling, is common, but cannot be defended unless some way is found to guarantee the future market price and also the selling conditions. The cost of selling for previous years is not always a safe criterion for the coming twelvemonth. With a given number of salesmen on the road, or a given running expense in the store, the comparative selling cost varies to a certain extent with the volume of

business done, so that a diminished trade would increase the selling cost and impose an additional burden on the current year that may be already showing bad results, owing to the reduction in the volume of trade and consequently in the gross profits.

43. *Complications with underlying companies.*—A complication arises in the case of a large company which is in reality a combination of several underlying companies. When the finished product of some of these companies is used as raw material by some of the others the question arises as to the basis on which the producing company shall charge out its product to the consuming company. Some accountants have taken the ground that all such charges shall be at actual cost and that no profit shall be shown until the material is finally worked up and sold by the finishing company, that unless this is done the inventories of the various companies will be carrying an unrealized profit on all material received from previous companies. As far as the regular operations are concerned, it would seem advisable to take over from one company to another products at a fair margin of profit, provided that by so doing the cost is not made greater than the same goods could be obtained for in the open market. In no other way could the earning value of each underlying company be ascertained, for otherwise the only earning company in the combination would be the one that finally finished and sold the goods. This reasonable profit would then become an entirely legitimate part of the cost to the consuming company in just the same way that it would have been a part of the cost in case the goods had been purchased from an entirely independent outside producer. From this reasoning it would appear proper for the consuming company to inventory all goods re-

ceived from a producing company at the price allowed the latter in the regular course of operations, in spite of the fact that in a sense the two companies are really one and participate in the benefit of the apparent profit that has been made. It might perhaps be clearer if this apparent profit is not called a profit as far as the general operations of the combination are concerned, but is considered a saving in cost.

44. *A uniform basis of valuation desirable.*—As the inventory is one of the principal factors in the revenue account, it is important that it shall always be taken on the same basis. It is clear that an overvaluation at the beginning and an undervaluation at the end of the fiscal period will reduce the profits of the period, and that converse treatment will increase them. It may not be so clear to an auditor, however, that it is his duty to advise that the basis shall not only be the same, but that it shall also be as nearly as possible, a true basis. Some men who pride themselves on their conservatism will take 10 or even 25 per cent off of the fair cost value of their inventories. In the long run, of course, it makes no difference in final results, but as between different years the basis of comparison is entirely destroyed if the inventories are not virtually uniform in value. A little reflection will show that, if the inventory is very small at the beginning and very large at the end of the year, and both inventories have been reduced 25 per cent below a reasonable value, the profits of the year have been understated by an amount equal to 25 per cent of the difference between the inventories. If the reverse conditions obtain the next year, the profits will be in a corresponding degree overstated, the result being that in two years of perhaps actually equal prosperity the conditions shown by the revenue statement may be largely

at variance. Unless the auditor understands the principles involved in the treatment of inventories he is liable to be puzzled when called upon by a client to explain some such anomaly as this.

45. *Machinery and tools.*—While the auditor is not supposed to be an appraiser, he is expected to know the general principles governing the valuation to be placed on assets appearing in the accounts. This is not difficult in the case of those which we have already considered. Being quick assets their value is soon determined, for if they are not quickly realized their deterioration is at once manifest. But the case is different with those assets that are designated as fixed, that is those that are intended to be kept for use and whose value is not to be based on what they would realize in cash. Among these are machinery and tools. There is apt to be some uncertainty as to the value to be placed on new machinery bought for a definite price but requiring considerable expense for installation. As the machinery is of no value to the business until it is set up, tested and ready for use, there seems no reason for doubting that its cost includes not only its original purchase price, but also all the expense legitimately incurred in installing it and experimenting with it until it is ready to become a producing power.

46. *Machinery made by the factory.*—When a factory makes some of its own machinery there is always a question as to the value to be placed on it when finished. One view is that it should be valued at whatever it would have cost if purchased on the open market from another factory. Mr. A. Lowes Dickinson clearly expresses what seems to be the correct view of this matter when he says:

Managers of the operating departments of a factory frequently claim that they should be allowed to charge a profit on construction work carried out for their own mills, on the ground that if the work were done outside they would have to pay a profit, and at the same time would set free their own facilities to carry out additional work at a profit for outside customers, and they even go so far as to say that if they cannot charge a profit on construction work carried out, they will in future have the work done on outside contracts. It must be admitted that this is a plausible argument, but a little further consideration will show that it is fallacious. There is here a confusion between a profit and a saving. The reason that a concern undertakes its own construction work in place of letting outside contracts therefor, is that it can by that means effect a saving in its expenditure by taking advantage of its own capital and facilities to carry out the work instead of using the organization and the capital of others, upon which it would have to pay a profit. The saving so effected is of considerable advantage, in that it reduces the amount of capital invested, and its future earnings will represent a larger return on the investment. Moreover, it is seldom true that the use of its own facilities for construction expenditure really means the throwing away of profitable work for outsiders, which would otherwise have been undertaken. It is doubtful if any well-managed concern ever refuses profitable orders, because of its own construction work. Its organization can and will almost automatically expand sufficiently to provide for any increase in its operations which is likely to be thrown upon it. Moreover, if a sum be added to the cost of construction and credited to profit and loss, to represent the profit which would have been earned by the company if the work had been done for outsiders instead of for itself, this profit can only be made available for distribution by increasing the amount of capital contributed for the new construction work, and it can hardly be considered good financial policy to increase indebtedness for the purpose of paying dividends. The only sound principle that can be adopted is to charge to

construction all costs and expenses which are directly attributable to that construction, but nothing for indirect expenses, interest or profit.

If this masterly statement of the matter needed any corroboration, it might be added that the operating accounts of the business as a whole, eventually realize the profit or saving by the reduction in the amount of depreciation that is annually charged off against the smaller valuation.

CHAPTER VIII

DEPRECIATION

47. *Difference between depreciation and fluctuation.* —The auditor should be thoroughly conversant with the principles that govern the allowance that must be made for depreciation in the case of all fixed assets except land. It is important at the outset that he shall distiguish between "depreciation" and "fluctuation." Depreciation is that lessening of the value of an asset that must necessarily take place in consequence of the use of that asset, while fluctuation is a change in value which is not caused by use but is the result of outside influences which may be either favorable or unfavorable. Fluctuation, therefore, may be either upward or downward, but depreciation must necessarily always be downward. As the fixed assets are not held for sale, but for use in producing floating assets that are intended for sale, the fluctuation in value is not an element of the manufacturing or trading operations of a business, and is, therefore, ignored in the accounts when favorable and only included in them, when unfavorable, when it is evident that the decline in value is permanent. Even then it must not be charged against the operating profits of any given year but against "surplus" itself, as an accidental or extraneous loss to be borne by the whole history of the business of which "surplus" is the epitome or general summary. A favorable fluctuation would, however, find expression

in the accounts in case of a radical change in the proprietorship as when a new partner is taken in, or an old one bought out, or when the entire business is sold to new parties.

48. *Depreciation always present.*—Depreciation, being inherent in the very nature of all fixed assets except land, must find expression in the accounts, and it is an auditor's duty to insist that it shall do so. It is often contended by a manufacturer that his machinery is kept in so complete a condition of repair that it is always as good as new for his purposes, and that no depreciation should be allowed for. While the auditor must take into consideration the extent to which repairs and replacements are made and can provide a lower rate of depreciation where these are ample than in cases where they are insufficient, it is still true that, however extensive the repairs are, there is a constant lessening of value from wear and tear that will eventually result in the necessity for a complete replacement. As this is a gradual process resulting from constant use, it should be expressed in the accounts by a gradual charge, in order that each year's operation shall stand its fair share.

49. *Causes of depreciation.*—The causes that bring about depreciation in an asset are:

(1) Employment or use tending to wear it out. The mere fact that a machine has been used at all, however little, makes it second-hand and, therefore, much less valuable. The fact that its market value has been largely diminished is not a measure of its depreciation, since it is not intended to be sold, but is a fluctuation in price to which no attention need be given.

(2) Lapse of time. Not only do such assets as machinery and buildings depreciate while being used, but the process continues while they are idle. In some

cases the depreciation is greater when idle than when in active operation.

(3) Obsolescence. Frequently when a machine has been in use satisfactorily for a comparatively short time it is rendered obsolete by the invention of a more effective machine for which the old one must be discarded. It sometimes happens that an unexpected enlargement of the business requires larger machines of the identical kind now in use, where two small machines are not as available as one large one or where the smaller is altogether useless, as in the case of a switch-board in a telephone company that has only one. In these cases the depreciation is extremely rapid, but nevertheless it must be provided for.

(4) Accidents. These include such contingencies as damages to overhead wires from sleet storms, lightning striking wires beyond the arresters, explosions in a gas-works caused by undetected leaks and similar occurrences that cannot be foreseen. They hardly come under the head of depreciation, however, and should be provided for by a separate reserve, except in those cases where the results would not be classed as catastrophes.

50. *Elements of depreciation.*—The various elements which determine the amount to be charged for depreciation of any asset are:

(1) The original cost, including, as we have seen, the cost of installation.

(2) The estimated life, or the time during which the asset may be fairly expected to do effective work. There are often a great many points to be considered in making this estimate. For instance the length of time which a gas main will last will depend on the character of the soil in which it is laid, on the climate, which may be alternately very wet and very dry, and on the nature of

the gas which may or may not contain chemicals which will corrode the iron. No hard and fast rule can be laid down for any class of assets, the only safe guide being experience under the same or similar conditions.

(3) The expenditure for repairs or maintenance. It is manifest that if a machine is allowed to become badly out of repair, it will deteriorate much more rapidly than one that is constantly kept in good order.

(4) The scrap value. If the object is such that it will have a considerable realizable value when it is no longer fit for use in a particular business, the depreciation would naturally be less than if it is of no value whatever or if the value is so small that it may be ignored.

(5) The probability of obsolescence. This would be particularly the case with special machinery of a new type which is liable to be materially improved upon, or that is intended to manufacture some article the demand for which rests upon some fashion or fad that may be evanescent.

Attempts have been made to construct from these data, depreciation tables similar to the mortality tables of life insurance companies. The variation is so great, not only between different classes of assets, but also between assets of the same class in different circumstances, that the auditor is wise who refuses to attempt such a task, but contents himself with ascertaining that the amount which is adopted as reasonable is based on the best obtainable data in regard to the particular assets with which he is concerned.

51. *Methods of charging depreciation.*—(1) Writing off an arbitrary amount. This is often done for the sake of equalizing profits, a large amount being charged off in very prosperous times and perhaps none at all when business is poor. This is not only a false statement of

the actual conditions of the depreciation, but it results in a false statement of the general operations of the business which ought to reflect the difference between good and bad years, and it should be unreservedly condemned by the auditor.

(2) Charging off a certain fixed percentage of the original cost, dependent on the estimated life. The objection to this method is that the charge is the same each year and there is no adjustment between depreciation and repairs. It is generally considered that as repairs are apt to be heavier in the latter years of the life of an asset, the depreciation should be heavier at first and should gradually diminish, thus equalizing the burden.

(3) Charging off a certain fixed percentage on the diminishing value. As the value diminishes, the amount at the fixed percentage will, of course, be less each year, providing for the increase of repairs and equalizing the total charge to operating cost. This method also provides for a small residual value, since the entire cost can never be fully taken up. For these reasons, this is the method usually adopted by the best authorities.

(4) The annuity method. Hatfield in his excellent work on "Modern Accounting," says that this "rests upon the assumption that the cost of production includes not only repairs and the depreciation of machinery, but as well interest on the amount of capital invested in the machine. Depreciation on this theory should be a sum figured as a constant annual charge sufficient not only to write off the decline in value, but also to write off annual interest charges on its diminishing value." After giving an example and the rule for ascertaining the amount of the annuity he continues:

The use of this system implies that at the time interest is charged to the plant there is a corresponding credit to interest

account, consequently the net result to profit and loss account taken as a whole is that there is an equal annual charge of depreciation and a diminishing annual credit for interest.

An objection to this method is that it introduces the custom of marking up the value of assets by an allowance for assumed interest. Furthermore, unless interest is charged on all capital invested, not merely on that subject to depreciation, there is a logical inconsistency in reckoning it in depreciation.

52. *Depreciation an estimate.*—A further objection is that it necessitates a complicated calculation to ascertain the exact amount that will be necessary each year to fulfill the conditions. It is an attempt to make an accurate statement of a problem which is not capable of exact treatment, for it must not be forgotten that the whole matter of depreciation rests entirely on an estimate. As Dr. Frederick A. Cleveland says:

> In any case, however, a depreciation table is nothing but a forecast of the probable wasting of an asset. The table, itself, is a record of a judgment made in advance, which the bookkeeper in a clerical way applies to the account to be handled. This judgment may be found to be erroneous and may not be borne out by experience. The accountant should, therefore, inquire both as to the premises or foundation for the initial judgment in accordance with which the table was compiled and as to whether, as far as possible, this result is checked by experience.

In conformity to this idea the auditor, in addition to the exercise of his best judgment, would do well to advise the periodical valuation of fixed assets by a professional appraiser. As this appraisement is usually made with a view to a possible fire insurance settlement, it is usually higher than the net value at which the assets are carried on the books. It is not obligatory to adopt such valuation in such a case, but it will be very

useful in determining the future rate of depreciation to know to what extent the past rate has varied from that established by the judgment of an expert.

58. *Expressing depreciation on the books.*—There are three methods of handling depreciation in the accounts.

(1) Writing down the asset by a charge to profit and loss and a credit direct to the asset account. By this method the original cost and often the insuring value are lost sight of. The cost of replacing an asset is the basis of fire insurance regardless of economic reasons which may make it advisable to carry it at a lower figure. In the case of a sawmill located in a lumber region where the stumpage will be exhausted in a definite number of years, the mill will be of little value at the end of that time and depreciation must be calculated with that consideration in mind for the purposes of the business, but that will not affect the insurance value in the meantime.

(2) Crediting a general depreciation reserve account with the depreciation on all classes of property. The objection to this method is that there is no way to tell just how any particular asset stands on the books, without analyzing the reserve account from the beginning.

(3) Crediting a specific reserve account for each individual asset. This is universally considered the best method, as it shows exactly the condition in regard to each asset. When an article is finally discarded its original cost is credited to the asset account and charged to the reserve, the new one replacing it being charged to the asset account. The relation between the asset account and the reserve being kept clear, it is always possible to ascertain whether a proper depreciation has been charged off.

The first and third methods may sometimes be advantageously combined when actual depreciation can be closely estimated, by writing down the asset to the extent of actual depreciation and in addition setting up a further amount as a reserve against possible obsolescence or accidents.

In the case of a wasting asset whose life is accurately known the first method may be employed, because the shrinkage in value is rather a result of consumption than of ordinary depreciation from wear and tear. Such an asset would be a patent right or a long term lease, both of which diminish in exact proportion each year.

54. *When an asset is sold.*—If an asset on which depreciation has been regularly credited to a specific reserve is sold, the proper way to enter the transaction on the books is to ascertain the actual carrying value of the asset, to credit the asset account with the original cost and to charge the reserve with the amount hitherto credited to it for that asset. The difference between these is the value at which the asset is being carried. The difference between this value and the cash received must be charged or credited to "surplus" as the loss or profit on the sale.

To make this possible and also for the purpose of obtaining valuable information in regard to the carrying valuation of specific items, such as machinery, it is an excellent plan to keep a list of such assets in a book provided with columns. On the line after the name of each asset and its original cost should be entered the depreciation charged against it, by the credit to reserve, for the year, the total of that column being naturally the total credit to reserve for the year. By bringing the totals forward each year the carrying value of an asset is at once ascertained.

CHAPTER IX

BUILDINGS

55. *Should be carried at original cost.*—Buildings owned by the business should be carried on the books at their original cost. In arriving at the cost of a building every item that enters into its construction or is caused by it is a legitimate element of the amount. If a building replaces an old one that was of no use at the time the land was purchased and that was not considered in the purchase price, the cost of tearing down the old building is a legitimate part of the cost of the new one. This would also be the case with a bonus paid to a tenant whose lease ran beyond the time at which the new owner desired to demolish the building. Of course, any money received from the sale of material from the old building would be a credit to the cost. Interest on the money paid to the contractors should also be included. If bonds are sold at a discount to provide funds for the building it is often claimed that the discount should be charged to the construction account as part of the cost, since it is in reality interest paid in advance, but this reasoning is fallacious, as we shall see when treating of the auditing of the bond account. Taxes and insurance up to the time the building is ready for occupancy, together with any other expense for supervision or administration are properly chargeable. The day that the building is completed and ready for use by its owner either for himself or for rental to others, all this cost stops and operating expense begins. After this the only additions to

the cost must be in the shape of items which are clearly and unmistakably betterments; that is, they must distinctly add to the value of the building. If they consist of the replacement of poorer by better elements, the difference in cost is the only thing that can be charged to it as an asset.

56. *Factors determining depreciation.*—No sooner is the building finished than depreciation begins. The general subject of depreciation having been discussed, it is only necessary in this connection to say that the amount to be charged off each year depends on the probable life of the building, which is governed by the strength of its construction and the character of the use to which it will be put. If it is to be filled with very heavy machinery it will naturally not last as long as if the machinery were light.

A greater allowance for depreciation should be made in the case of a building whose cost has included extraordinary items than where only the actual cost of material and labor has been charged to it. If the building is on leased ground and reverts to the holder of the fee at the end of the lease, the whole cost must be provided for during the life of the lease.

In the operation of the business an account should be kept with "building expense and repairs," which together with the depreciation will constitute the rent that the business pays. It is perfectly legitimate to include also a fair interest on the cost. If preferred, the operating expenses of the business may be charged a fair rental on the property, which will be credited to the "building expense" account, and in this way it will be shown whether the ownership of the property is a paying investment or not.

[illegible]—When land is owned it should appear on

the books at its fair cash value. This would be its cost if it were purchased by the business, or the fair market value if it were taken over at the formation of the company. Any permanent improvements, such as sewers, water pipes, roadways or sidewalks can be added to this value at their first cost. Repairs or replacements, such as repaving, must be treated as items of expense.

58. *When the land increases in value.*—One of the most perplexing questions in this connection concerns the value of real property. If a factory is started on land bought in an improving neighborhood and the market price of the land doubles in any given time, is it right to carry the land on the books at its increased value and thus offset the cost of replacing the building which has deteriorated to an equal extent? At first sight it would seem to be a proper thing to do, but it will not be so plain if we ask in what way this business has been benefited by the accidental rise in value. If conveniences in the way of better shipping facilities or cheaper railroad connections have tended to lessen the cost of handling the goods, some increase in valuation may be allowed as an expression of the value of the saving in expense, but if all conditions remain the same, it is difficult to see why the profits of the business should be swollen by the admission of an unrealized element, still less why a dividend should be based on such gain. If the land is actually sold and the factory moved to a cheaper location, there would be no objection, but until it is actually sold the profit is not realized and, therefore, not made. There is nothing to guarantee the stability of the new market price, which may drop back to the old figure and necessitate some awkward entries to the debit of the profit and loss account, especially if the supposed profit has been divided in cash among the

partners or stockholders. In a celebrated English case it was decided that the directors were personally liable for money thus paid out in dividends based on the increase of the value of land which was not sold, and which subsequently depreciated to such an extent as to impair the capital of the company.

59. *When land is donated.*—Another perplexing question is frequently met by the auditor when examining the accounts of a factory that has been induced to move to a small city by the conditional donation of land. We will assume that the land is fairly worth $30,000 at the time the factory moves to the city, and that the conditions are that the title shall vest in the factory company at the end of five years, provided it shall have given continuous employment in the meantime to an average of three hundred men. Since the title is conditional, it is manifest that no value can be carried on the books to represent the land until the end of the five years, unless it is offset by a special reserve account of the same amount. At the end of the period when the title is perfected, the factory is undoubtedly possessed of an asset worth $30,000 for which it never paid any money. On the theory that no asset can be carried at a greater value than its cost, there would be no way to put this item on the books, and yet it is plain that it should be there. If it is placed on the books as an asset for $30,000 it is necessary to have a credit to offset it. Some accountants say that they have no right to credit the amount to profits and allow it to be the basis of a dividend to be paid in cash. They claim that it should be credited to "special surplus," but do not seem able to explain what will eventually be done with this account. Others claim that it is a real profit and available for cash dividends and defend their position by

saying that the transaction is, in essence, the same as if the company had been given $30,000 in money and had then invested that amount in the land. The gift of the money would of course be a clear profit and would be available for dividends. In treating it as a profit, it must be as a sporadic or accidental profit and under no circumstances as an operating profit. A third method would be to credit it to "reserve for depreciation" and thus save the necessity for charging off depreciation for a number of years. This would be treating it as a profit (or the saving of an expense) but distributing it over the operations of future years. A compromise measure would be to declare a stock dividend of that amount, distributing $30,000 of new stock to the old stockholders. This method also treats the amount as a profit, but specifically shows that it is a capital profit and not an operating one.

60. *Land bought for re-sale.*—When land is purchased, not for permanent occupancy but for re-sale, it becomes a commodity, virtually the same as the goods bought and sold by a trader in merchandise. When a large parcel is bought and subdivided for sale in city lots, the trader becomes a retailer. All the expenses necessary to bring the land into proper condition for sale are a part of the cost, and the unsold lots are to be carried at their proportion of that cost. The auditor in preparing a balance sheet for such a trader should exercise caution in valuing the unsold lots, as their value is not necessarily the same proportion of the total surface, since differently located lots would almost certainly vary greatly in value. The proper method would be to have all the lots in the tract valued separately in proportion to their proposed selling price so as to spread the total cost equitably over them all, and then to take an

inventory of the unsold lots at cost. It is sometimes claimed that interest on the capital invested in the land should be added to its carrying value as cost, but this does not seem to be defensible, as it is a marking up of the value for an arbitrary amount not actually expended. Even where interest is actually paid on notes given for part of the purchase money it is better not to add it to the cost, but to consider it as a general expense of the business and an offset against the final profits.

61. *The expression "real estate."*—The expression "real estate and buildings" is often seen in financial statements. In the interests of exact terminology, the auditor should avoid it. Real estate is "immovable property, usually confined to land and buildings erected thereon." It, therefore, includes the buildings. If it is desired to bring out the point that the company owns the ground as well as the buildings the proper term would be "land and buildings."

62. *Patterns.*—In a manufacturing company it is not uncommon to find very considerable sums carried as assets representing patterns. It is ordinarily impossible for the auditor to pass an authoritative judgment on the real value of these, but he should make very careful investigation as to how many of them are actually in use or are of such a character that they are likely to be used frequently. When special patterns are made for some specific work, not likely to be constantly repeated, they should be considered a cost of that work and should not be charged to pattern account at all. In case of a repeat order the advantage of having them on hand is likely to express itself in a lower bid for the work, rather than in an extra profit. Even stock patterns that are constantly in use should be carried with a very liberal depreciation, as they are liable to very rapid wear. All

of those which have been superseded by newer designs should be rigidly excluded from the inventory, unless the business is of such a nature as to call for large quantities of the old style article, as for instance a stove or range.

63. *Patents.*—An important item that is often found among the assets is patents. It is very difficult to arrive at any basis for their valuation on the books. Even when they have been in use for a considerable time and have proved their value as an earning power, there is always danger that they may be superseded by some improvement that will render them of little or no value. The auditor can be governed, however, only by what purports to have been paid for them, even when that is a large amount of stock issued to the patentee. Any further sums that are expended in the way of patent fees for completing or extending them are a legitimate charge against the account. The expense of legal fees in defending the patents or in prosecuting any infringers is also chargeable to the same account, in order to show the actual cost to the business, as the patents are of no value, until they are shown to be valid. Sometimes they are carried at no more than the actual cost of taking them out and perfecting them, and it is proposed to give them a further value by writing them up on the books. The auditor should always resist this, unless there is actual value given to the patentee, either in money or stock, as otherwise the transaction would consist of an arbitrary increase in an asset, which would have the effect, directly or indirectly, of increasing the surplus on account of an unrealized element. When the patent has an actual market value, it is difficult to find valid reasons for not expressing it on the books, except that it is a dangerous practice to write

up any asset whose character is not absolutely fixed and which is not intended to be sold or realized upon.

A patent should not appear on the books at all, unless it is absolutely transferred to the company, or at least a binding agreement has been entered into, giving the company the exclusive and perpetual use of it.

The depreciation to be charged against this asset should at least be large enough to extinguish it by the time it expires. Owing to the danger of its being rendered obsolete by improvements patented by others, the rate should be much greater than this.

In a merger of several companies the possession by one or more of them of valuable patents may be properly made the basis of capitalization allowance. To what extent they are to be valued must be left to the decision of the various parties in interest. Unless there is glaring evidence of fraud, the auditor must be guided by their judgment, as to the earning power and, therefore, the value of the patents.

CHAPTER X

INTANGIBLE ASSETS

64. *Good-will.*—All the assets, heretofore considered, have been what are called "tangible assets," those that have a real, physical existence. There is another class, called "intangible assets," whose consideration deserves careful attention, for while they may not be said to have a physical existence, it cannot be denied that they have an actual value. The most important of these is good-will.

Good-will is one of the most perplexing items that the auditor encounters, and sometimes it is one of the most important. It is undoubtedly true that a trade-mark or a name may have a great value, but how great is a very difficult point to determine. In a company where every dollar of the stock has been paid in, in cash, it is usual to charge all the expense of putting the business on its feet, including advertising, until there begin to be some returns from it, to the account of good-will, but how far this is to be allowed to go there is no one able to determine authoritatively. As a matter of fact the more prosperous the business is the more valuable is its good-will, but such a business is able to take care of its advertising and other extraordinary expenses, such as experiments, out of its own resources and does not need to bolster up its assets with anything intangible at all. It is before the business reaches this point and yet when it is showing indications of some day becoming valuable that it is difficult to determine

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ognition given good-will in England than in this country.

In regard to the nature of good-will, he says further: "The only necessary elements appear to be these; a positive element, enabling the person who acquires it to represent himself as the successor to the business of the person from whom he acquired it; and a negative element entitling him to restrain the transferer of the good-will from soliciting the old customers of the business which has been transferred."

Good-will is recognized as property by the English statutes and is always treated as property between purchaser and seller. In this country it is so recognized by some of the states, but it will be found that courts and lawyers are very far from having any very clear ideas on the subject.

66. *Rights of buyers and sellers of good-will.*—The purchaser of a good-will has the right to advertise that he is the owner, and if he has acquired the business from a former owner, to represent himself as the successor and the only successor to the business.

The position of the seller of a good-will in regard to competition with the purchaser is that he must not solicit business from the old customers of the firm by using any information or advantage that comes from his previous connection with the business, but he is not obliged to refrain from going into the same business and soliciting trade by a general appeal for it, unless he has entered into an agreement as part of the sale of the good-will that he will not do so. Before leaving the old connection he has no right to make a list of its customers with a view to soliciting them. In case of bankruptcy and a sale of the good-will by order of court, any partner of the old firm can solicit from the

old customers, as his parting with the good-will was not a voluntary act on his part.

Frequently the most valuable of the rights which should pass to the man who acquires a business is the right to use the name under which the business has made its reputation. This cannot always be done, as for instance in the case of a doctor or lawyer selling out his practice. It would naturally be a hazardous matter for a lawyer to practice under the name of another in such a way as to lead to the inference that the latter is the actual practitioner. But in ordinary business concerns where the name has been long before the public, the original parties may have been dead for many years and yet the business be carried on under the old name.

In the case of one partner selling out to the other all his interest in the business, including the good-will, the sale carries with it the exclusive right to the use of the firm name. A Chicago instance of this is the well known firm of Lyon and Healy. When Mr. Lyon sold out to Mr. Healy, he did not expect to go into business again and sold the right to the old firm name to Healy. He afterwards changed his mind and went into the same business and tried to prevent Healy from using his name in the old business, but he was not successful. The retiring partner cannot use a name calculated to deceive, nor even use his own name as late of the old partnership in such a way as to convey the impression that it is the old firm that is carrying on the new business. This applies, of course, only to those cases where the sale of the good-will expressly includes the right to use the old firm name in its entirety. Unless this is done, neither partner can use the name of the other in the new firm name.

If the good-will consists largely or altogether in the

use of certain trade-marks or names the right to their exclusive use would naturally be included in the sale of the good-will.

67. *Valuation of good-will.*—The valuation of the good-will of a business comes under the notice of the auditor whenever the share of a retiring or deceased partner is sold to the remaining partners or to a new partner; when the new partner is taken into the firm, all the old partners remaining, or when the whole business is sold out to new men, or when a number of firms or corporations combine to form a new one.

The conditions that the auditor must take into consideration, in advising as to the basis of a valuation, include the disposition of the retiring partner to assist or to oppose the new combination to the extent of his power, or whether it is beyond his power either to assist or oppose.

In arriving at a basis for valuation, the most important point is, of course, the earning power of the business. But this should be judged in connection with the amount of capital necessary to carry on the business and the amount of work necessary on the part of the purchaser as manager. That is, the earning power is the net profit after allowing a fair rate of interest on the capital employed and a fair rate of remuneration to the manager, unless the business is such that no manager is necessary, except the one already employed whose salary has been already included in the expense of the business.

Other things being equal the income which can be produced with the least capital outlay will command the highest good-will, even after interest on capital has been allowed for.

Business which calls for the least amount of skilled

superintendence on the part of the proprietor will command the highest good-will.

If the good-will is founded on a monopoly or quasi-monopoly it will be worth more than would be the case if competition is keen. If the monopoly is founded on patents this would apply only in so far as it is improbable that subsequent patents will make them practically valueless.

If the value of the good-will depends on the right to carry on the business at the old stand, it would be affected by the length of the term for which the premises are held, the danger of a competitor acquiring the premises at the end of the lease, or of an increased rental being demanded.

68. *How many years should be considered?*—The precise number of years to be taken into consideration in valuing the good-will is very difficult to determine. Dicksee gives a number of different cases, varying from manufacturers at one to three years purchase up to newspapers and other quasi-monopolies at ten years purchase, but he does not give any reason for his classification. He says, however, that where remaining partners buy out a retiring partner the value should be 25 per cent more; and that when a company buys out a private partnership the rate should be greater, since the investors in a company's shares, usually, look only at the rate of dividend earned and any excess above usual rates of interest could be capitalized as good-will, and as their liability is limited they are prepared to pay a higher price than the private purchaser who risks his whole fortune in the venture. He, therefore, thinks that the good-will of a corporation should be placed at twice that of a partnership.

69. *To determine earning power.*—In determining

the earning power of a business the results of a series of years should be taken into consideration, as one or two years may show abnormally large or small profits. The course of the business should also be taken as a guide, that is the question whether the profits are steady, are increasing from year to year so as to show a healthy growth, or are diminishing. It should also be noted whether any new conditions have arisen which would affect the profits and whether those conditions are likely to continue. A case in one of our courts illustrates all these points. A patent medicine concern lost $9,000 the first year, $5,000 the second; made $4,000 the third, made $10,000 the fourth—making them just about even —and the fifth year made $119,000. A broker was put on the stand and asked to value the stock. He said that the stock of a company of $100,000 capital that made $119,000 in one year was worth at least 600, but accountants who testified denied this and claimed that the abnormally large earnings should be disregarded unless they could be shown to be sure to continue for the succeeding years. As the last year was the only one when the present manager had had full charge of the business, and as the parties bringing the suit were trying to oust the manager, the accountants testified that in their opinion the last year should be ignored altogether in estimating the good-will.

It is generally considered that it is necessary to go back from five to ten years to ascertain the average earning power of a business, depending on its character. We have seen, however, that it is not always safe to rely on the average only, without taking the other conditions into consideration.

70. *Good-will as a capital asset.*—Dicksee, as well as other authorities, claim that good-will is a fixed or cap-

ital asset, because it is something which has to be acquired in order to carry on the business at all. Variations in the value of capital assets are not supposed to affect profit, therefore, fluctuations in the value of good-will should not be allowed to do so. If in a going concern increase in the good-will is credited to profits, there results a swelling of the profits which is not realized and which is liable to shrinkage. As the increase in value is caused by the increase in actual profits, and as these profits have already been taken into account, the addition of the increased value of the good-will to the profits will cause a doubling of the apparent gain and thus may lead to the impression that the business is doing twice as well as it really is, and may also lead to increased dividends or personal expenditure not authorized by the real conditions.

Good-will appears legitimately in the accounts when it was actually paid for in acquiring the business, or where one or more retiring partners are paid off by the remainder of the firm. It may also appear when certain definite expenditures have been incurred for the purpose of creating a good-will such as advertising or any other legitimate expense of establishing a business on a profitable basis.

Although the English authorities all agree in saying that good-will is a capital asset and that it should not be charged off at any time to profit and loss, they yet claim that it is undesirable to carry it in the accounts, but they do not seem able to suggest any way to handle it when it has once made its appearance.

From the auditor's standpoint there is no doubt that it would be better to keep this account off the books entirely, as Dicksee and others advise, but there seems no way to do it except by charging it off to profit and

loss, unless the capital is reduced. In the case of a new business it can be done by charging all the expense of establishing the business to "development expense." This may look like simply giving a different name to the same thing, but it is apt to work out differently, because it will seem more imperative gradually to charge off an account that is professedly an expense account than one representing itself as the synonym for the earning power which is constantly increasing in value and, therefore, does not call for any diminution on the books. In the case of a company taking over the business of another at an enhanced value on account of its successful efforts to establish a reputation, the new company could issue its stock at a sufficiently high premium to pay for the good-will and yet leave its capital the actual representative of the tangible assets taken over. This would avoid the necessity of carrying good-will as an asset of the company or of charging it off against profits. In the case of one partner being bought out of a business by the others, where he is given more than the book value of his interest as an equivalent for his share of the good-will, the bonus thus allowed could be charged pro-rata to the continuing partners, instead of being charged to good-will as is often done. Similarly if a new partner buys into a business, paying more than book value for his interest, the excess could be credited or paid to the original partners. In a bank where all the assets are required to be tangible and actual, the good-will is represented by the excess of the market value of the stock over book value, and the same principle could be applied to the stock of any incorporated company or an interest in an ordinary partnership.

71. *Good-will and stock watering.*—The greatest objection to carrying good-will on the books as an asset

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of years designated should be added together to form the agreed value, or that the average of a greater number of years should be ascertained and multiplied by the designated number of years. For instance, if the agreement is that the good-will shall be valued at three years' purchase of the average of the last ten years, and that average is found to be $10,000 per annum, the good-will would be worth $30,000.

Sometimes it is agreed that the excess of earnings over a certain rate shall be capitalized at that rate as the value of the good-will. In that case the average excess earnings are divided by the decimal representing the rate to find the amount. That is, if the rate is 8 per cent and the average earnings are $4,000 more than 8 per cent on the capital, the $4,000 is divided by .08 to find $50,000 as the value of the good-will, the theory being that since the business itself earns 8 per cent the good-will must be $50,000 to earn $4,000 at the same rate.

Dicksee says that if good-will is put on the books through purchase and is afterwards charged off against "surplus," a secret reserve is thereby established, but his contention does not seem to be tenable. There is no doubt that the balance sheet will show a smaller surplus than before, but since there is now no good-will among the assets, there is nothing secret about the statement. It is true that the net earnings to date, represented by the surplus, will be lessened, and it might appear that the earning power of the business had been srepresented. But a balance sheet standing by it-f is no criterion of the earning power. That can ascertained only by a summary of the profits and ses of a series of years. In making such a summary would necessarily be disclosed that there had been

charged against surplus not only sundry dividends, but also the amount of the good-will. However it is regarded, the element of secrecy seems to be lackng.

72. *Deferred charges as assets.*—Closely allied to good-will as an asset are items that are known as deferred charges. They are in reality expenses, but differ from those which are at once chargeable against revenue in that they were not incurred for the current year alone, but were intended to benefit future years as well. They, therefore, hold an intermediate position between real assets and ordinary expenses. When the organization expenses of a concern have been large, it is manifestly unfair to charge them all off against the first year's operations, since subsequent years will receive an equal benefit from them, if they were legitimate and proper. They can be carried as an asset, to be charged off during as many years as is thought reasonable.

73. *Advertising.*—Advertising is often an item of this character, when its object is to create a demand for specific articles that are staple with a manufacturer. How much should be charged off during the current year and how much carried forward to the future would depend on the character of the goods advertised and the probable continuance of a demand for them in the future consequent on the advertising. Of the same general nature are various devices to induce custom that, strictly speaking, are not advertising and are better described as "promotion of new business," such as the sale below cost of electric appliances, signs, etc., by an electric lighting company with the idea of making a demand for its current. Since the profit on the current sold will continue for a number of years, the loss on the appliances should be spread over the future,

usually for three years, being carried in the meantime in the temporary asset account.

74. *Development expenses.*—Where stock has been donated to furnish funds for development purposes, the development expense is charged temporarily in appropriate accounts, but these accounts are not deferred charges, but are offsets to the credit established when the donation was made, and are carried nominally as assets for statistical purposes only.

75. *Interest, rent, etc., paid in advance.*—Other examples of deferred charges are interest, rent, taxes and insurance paid in advance, insurance differing from the others in having a realizable value by cancellation. Interest may be said to have an actual value also, realizable if the notes on which it is calculated are paid before maturity. There may be corresponding deferred credits, if any of the items are accrued but unpaid liabilities. This is almost always the case with labor. In treating these items, it is the custom of some to open accounts with them, such as unexpired insurance, which is charged and insurance credited, but this seems a useless waste of time and space, since the same object is gained by making the proper profit and loss entry directly to the one account, with the result of leaving a balance in that account which designates the amount to be carried as an asset or a liability, being the unused portion of the item. The same remarks apply to the practice some have of opening an inventory account and carrying it through the entire year on the books where it means absolutely nothing. The same object is attained in a much more logical way by leaving in the "merchandise purchase" account the value of the goods on hand, as a debit balance to represent the purchases that have not been used. An analysis

of the purchase account will show this plainly. At the end of the fiscal year the account shows all the purchases made to date. It makes no difference when they were made, therefore, the inventory at the beginning may be ignored. All these purchases have been consumed except the amount on hand. Expressing the amount used by a charge to profit and loss leaves a balance in the purchase account of unused purchases on hand. It is difficult to see why it does not belong in that account instead of transferring it to another account, inventory. But if anyone wishes to open the latter account at all, it should at once be closed back into purchase account at the opening of the new year, as it is undeniably purchased from the inventory account again as soon as the business of the new year begins.

CHAPTER XI

ACCOUNTS PAYABLE

76. *Hidden liabilities.*—In the examination of the assets the principal thing the auditor has to guard against is their overvaluation, either by giving those that actually exist too great a value or by including those which are valueless or those to which title has not been acquired, as in the case of goods, included in the inventory, which are held on consignment or for which no credit has yet been passed through the books. As these are positive items of record it is not very difficult to trace them and establish their true character. The case is different with liabilities, where the danger lies in omission, which is naturally more difficult to detect, since there is nothing on the surface to which attention would be called. The auditor must, however, be on the alert to discover if possible, whether any liabilities have been omitted, as he will undoubtedly be blameable if there are any clues to their existence which he has overlooked. If there is nothing in the accounts which would lead him to suspect any such undisclosed liabilities he cannot be held liable for not having discovered them.

77. *Verification of accounts payable.*—Accounts payable should be verified by comparing the last statements received from the creditors with the accounts on the ledger or the entries on the "audited invoice register." This will detect the omission of any liabilities to parties having open items in either place, but will not discover the suppression of such items, where only

of the purchase account w ... the last one was end of the fiscal year the ... this kind of a chases made to date. It ... small to have they were made, therefore ... into stock, but ning may be ignored. ... next audit if the consumed except the ... note the dates the amount used by a ... assure himself that a balance in the purch... ...red by the previous on hand. It is difficu... ...ities shown at that in that account inste... ...way to prevent an account, inventory. ... liabilities and thereby latter account at all. ... he wishes to do so by into purchase accoun... ...m one or more houses, as it is undeniably ... whom he seldom buys. count again as so... ... the method of check- begins.

...revent this, as the invoices ... course and the auditor ...erruption in its regularity. ... the auditor could verify ...mmunicating with the cred- ... will show that in the case of ...nthly statements this would ... case of those who have not, ... been suppressed, it would ...would have no record of them, ... in the inventory which had ... which were not represented

... account payable of a con- ... disposed of by journal entry, ... very carefully into the reason ... that it is made entirely from ... and is not acquiesced in by ... may be a disputed claim which

determined not to pay, but which it may have to meet eventually when the case is into court or is otherwise decided against it. meantime it is at least a contingent liability and not be lost sight of as such.

78. *Unpaid taxes, interest, rent, wages, etc.*—ere may also be liability for unpaid taxes, for bond terest accrued but not due or for rent in arrears. There is almost always at the time of closing the books and making a profit and loss statement, a liability for wages earned but not payable until after the books are closed. In the case of taxes, interest and insurance, if the liability is to be shown each month, so as to equalize the charge, the monthly proportion would be crdited to "reserve for taxes," for interest and for insurance and the actual payments charged against the reserve account, so that the one account would be sufficient to show whether there was an accrued liability, or if there had been payment in advance, an earned asset. This is seldom done, however, except in a monthly closing cost system.

79. *A railroad's liability for tickets sold.*—In case of a street railroad company that sells tickets it is often the practice to credit the whole amount of the ticket sales to earnings the day they are sold and to pay no attention to the liability that exists in the tickets outstanding. There is a double error here, for the earnings account is credited only with the net proceeds of the tickets and no attention is paid to the discount at which the ticket is sold. The proper way is to credit "tickets" with the net proceeds from the cash-book, which should have a column for "ticket sales," and at the end of the month, credit the same account with the amount of the discount, charging it to "ticket discount."

As each conductor makes his report he divides his receipts into cash fares and tickets. The whole of his receipts is credited to "railway fares," cash and tickets being charged with their respective amounts. In this way the face value of the tickets outstanding is always shown on the books.

This is only possible when the tickets are made detachable, so that one ticket is torn off and given to the conductor for each fare. If the tickets are made in the shape used by many suburban steam roads, where the ride is paid for by punching a number out of the ticket, there is no way to keep any account of the unused portion of the ticket outstanding. At the best it could be approximated only by an estimate which could not be made reliable.

80. *Coupons redeemable in merchandise.*—Some stores in country towns and small cities issue books of coupons redeemable in goods, and credit the full value of the books to merchandise as soon as issued. When the coupons are redeemed over the counter they are cancelled and filed away, but no account is ever kept of them and there is no way to ascertain how many of them are outstanding at any time.

These are some of the kinds of liabilities that the auditor must look out for and if possible ascertain, or at least must call attention to them in his report. Where the method of treating them in the accounts is defective, it is his duty to call attention to the defects and to recommend the remedy for them.

81. *Bills payable.*—Dicksee says that "notes payable" present but little difficulty to the auditor, the re-
rn note being the voucher for the payment of notes
atured, while the notes running, as shown by the notes
yable book, will explain the balance of the notes pay-

able account in the ledger. He refers to the fact that notes of considerable amount may be negotiated without any entry being made on the books, but dismisses the subject by saying that the auditor should make enquiries at all of the banks with which the client is connected, and such further enquiries as may be feasible. He does not seem to realize that unrecorded notes would not be likely to be in the regular banks of the client, but rather in the hands of personal friends, or sold through the instrumentality of a dealer in commercial paper.

82. *Contingent liabilities on endorsements.*—One of the most difficult things for the auditor to ascertain with absolute certainty is a possible contingent liability. On bills receivable discounted the matter is simple enough, but it often happens that one or more officers of a company will make an individual bill payable, endorse it with the company's name and get it discounted, placing the proceeds to his or their credit. Of course it still shows as a liability, unless it is drawn against or has been made to cover an overdraft already exisiting. But even where the liability remains on the books, there is a great difference between a debt due to an officer of the company, and, therefore, under his control, and a note in the hands of a third party who may suddenly demand payment. But unless a memorandum is made of such a note in the bills payable register there is no way for the auditor to discover its existence, unless he notices that interest is paid out when there is no regular note of the company on which interest is then payable. If he finds such an item he must follow it up until he ascertains the note on which it was paid and if that note is not shown on the books as at least a contingent liability, he must insist that it be so entered. This is

especially urgent when his report is to be used as a basis for credit in bank or with creditors.

83. *Accommodation paper.*—Accommodation paper is harder to locate, especially when it is given for the accommodation of the other man, but there is liable to be some trace of it left, which may escape the attention of the auditor if he is not on the lookout for the reason of any peculiar entries. If each party to the trade takes up his own note the transaction would be shown by the check given and the deposit made, but if the other party takes up the note of the auditor's client and returns it to him there would be no clue to the affair, unless the cancelled note is found among the regular bills payable that have been paid and filed away. If the auditor has not been able to find any trace of such transactions, he must content himself with the statement of the officers of the company that they are not indulging in the practice of kiting. He is not responsible for not discovering the existence of unrecorded notes, if there is nothing on the book which would excite his suspicions.

84. *Bonds.*—Bonds may appear in the accounts on either side, according as they are issued by the company or held as an investment or in a sinking fund. As there is little difference in the practical handling of the accounts, they are treated under the head of liabilities, as that is where they are usually found in the ordinary company.

The auditor is interested in the different classifications of bonds, only to the extent to which his duties vary in regard to the different kinds. In an original investigation in regard to mortgage bonds, he should examine the original record of the mortgage or a properly certified copy, in order to ascertain whether there

are any provisions as to a sinking fund, or a periodic redemption of any portion of the issue by lot or otherwise. It is not his duty to ascertain whether the mortgage is a first lien, though there are instances on record where the auditors have discovered and called attention to prior liens that have been overlooked.

Debenture bonds, as a rule, are a general charge against all the assets, and are really nothing more than notes payable. But occasionally they are made a charge against specific assets, amounting to a lien on them and it is the duty of the auditor to examine the trust deed to ascertain whether such a condition exists.

If the bonds are income bonds, which are payable only out of funds provided by net profits actually made, the duty of the auditor is to see that no dividends are paid out of the profits until the payment of the bonds has been made or provided for.

In the same way the auditor must acquaint himself with the conditions incident to any issue of bonds and ascertain whether they have been complied with. Unless there is power of substitution in the trust deed, the company has no right to sell any of the pledged property, without retiring an equivalent amount of the bonds, even if it at once buys more valuable property of the same kind. There may be a provision for the carrying of a minimum amount of fire insurance to protect the bondholders. All these conditions should be known to the auditor and he should report any violation of them.

85. *Unissued bonds an asset.*—Unlike unissued stock, unissued bonds are to be carried as assets, though they are best shown on the balance sheet as a deduction from the credit balance of the total authorized issue. Hatfield says that there is no essential difference between them and stock. There is this radical distinction—un-

issued stock has no value whatever, while unissued bonds are a part of the authorized issue which is secured by a mortgage on the property. This lien gives them value, which is in abeyance as long as they are in the hands of the company, but which becomes operative as soon as they are acquired by others. Therefore, treasury bonds are just as good collateral for loans to the company itself as they would be to others who had bought and paid for them.

Bonds, unlike stock, can be sold by the issuing company at a discount, without any liability on the part of the purchaser for the difference between the purchase price and par.

86. *Bonds sold at a discount.*—When bonds are issued and sold at a discount, all authorities agree that the discount is an anticipation of interest, because if the rate of interest had been made higher, the bonds could have been sold at par and the burden of the additional interest would have been distributed over the life of the bonds. Arguing from the fact that the discount was in reality interest, it was long claimed, even by accountants, that it was chargeable to the capital account of the property for the acquisition of which the bonds were issued, as for instance a building or plant. There is no doubt that interest paid on funds used in the erection of a building *during the time occupied* in completely finishing the building is chargeable as an element of its cost. It does not by any means follow that the discount, which is confessedly the equivalent of interest to be paid in the future, long after the building is finished and in use, is in any true accounting sense any element whatever of the cost. It has been so treated apparently, because it was the easiest way to dispose of it, until now the custom has virtually as-

sumed the sanction of an economic law in the minds of business men.

87. *An improvement on the common method.*—An analysis of the true nature of the conditions may show a better method of treating this subject, although it is doubtful whether it will ever be possible to change the accounting practice now in vogue. If it is agreed that it is wrong to show the discount as a part of the cost, it can, of course, be carried in the balance sheet as a nominal asset, in the nature of interest paid in advance. The presence of such an item among the assets will naturally meet with objections. To meet this criticism and at the same time to represent accurately the true condition, it would be necessary only to show the discount where it actually originates, in the bond account itself, by carrying that account at the amount actually realized. There is no doubt that a liability need be carried only for the amount that the company is at present liable to pay. If the bonds are sold at a discount to-day, it is because they are worth no more than the net amount realized, and if the company were in funds, it could repurchase them for virtually that amount. If this is true, the present worth of the liability is only that amount, and there is no accounting reason why it should be shown for any more on the balance sheet, if the eventual liability representing the face of the bonds at maturity is also shown in parenthesis. This is the practice very largely adopted in England, where it seems to have arisen from the fact that companies frequently issue debentures redeemable only at the option of the company and that these debentures are often issued and also retired at a discount.

If this plan of carrying the bonds is adopted, operating interest should be charged each year, and the bond

account credited, with the annual proportion found by dividing the discount by the number of years the bonds have to run. In this way the bond account will equal the face of the bonds when they mature and each year will have carried its share of the interest, as it should have done, and as would have been the case if the bonds had been issued at the higher rate of interest.

Whatever plan is adopted, the auditor must strenuously oppose the charging of the discount to the investment account. Fortunately he is not obliged to depend entirely on theory to defend his course, since he can now quote as authority the Inter-State Commerce Commission, which has definitely instructed the railroads to charge the discount to "discount on bonds."

88. *Bonds sold at a premium.*—When bonds are sold at a premium it is always a perplexing question as to how the premium shall be treated. Some accountants claim that it is an accidental profit of the year in which the bonds are sold, and if the amount is small there is no real objection to treating it as such to the extent of offsetting it against the cost of printing and issuing the bonds, or against other organization expenses. But if the amount is large it is not fair to subsequent years to burden them with the higher rate of interest and give the advantage to the year in which the bonds are issued. The better way would be to carry it as a deferred credit which would be annually reduced by a proportionate credit to interest.

89. *The basic rate of interest.*—If bonds are bought at a premium or discount it is clear that the coupons do not represent the interest on the actual money invested since the premium or discount will disappear when the bonds are paid at their face at maturity. In the case of bonds bought at a premium each coupon

contains its proportion of the refund of the premium, and since each refund reduces the amount of the actual money invested, the principal entitled to interest is a constantly reducing quantity. The actual rate of interest realized is called the basis. To illustrate, if bonds are bought at 110 bearing 6 per cent, and running such a time as to make the actual rate or basis 5 per cent, when the first semi-annual coupon of $30 is paid it is not right to credit the whole of this to interest, as the bond is now six months nearer maturity. As the basis is 5 per cent, the interest on $1,100 for 6 months would be $27.50 which should be credited to interest and $2.50 to the principal, reducing the latter to $1,097.50. The next coupon would have to provide interest on this at 5 per cent, or $27.44, with $2.56 to go to the credit of the principal. At the maturity of the bond the principal will be reduced to par.

In the case of bonds bought at a discount, the basis rate would be greater than the coupon, and the principal would be charged with the difference since the bond becomes more valuable as it approaches maturity.

In keeping the account with the bonds the face of the bonds may be kept in one account and the premium and discount in another, or the account with each issue of bonds may be kept in double columns, the first being a memorandum column of the face of the bonds, and the second the amount at which the bonds are carried. The latter is the better way when a number of different bonds are carried as an investment, or in case of a bond dealer.

Bond dealers charge each class of bonds bought to a separate account at the amount paid for them, and the interest to date of purchase is charged to "accrued interest," which is carried as an asset. At the end of

each month the accrued interest of all the bonds on hand is calculated and the difference between this amount and the face of the account is charged to accrued interest and credited to interest. When bonds are sold, the bond account is credited with the price realized and the difference between that and the value at which the bonds were charged is credited or charged to "bond profit and loss." The interest received on the bonds in the sale is credited to accrued interest and so are any coupons that may have been collected. In this way the accrued interest account always shows the amount of interest accrued but not due as an asset and the interest account the amount which has been earned to date.

90. *Sinking funds.*—In order to secure the payment of bonds more effectually there is often a provision in the trust deed that the company shall establish a sinking fund. This has been defined as a species of financial arrangement by means of which a fund is created to reduce or extinguish a debt, either already incurred or about to be incurred. The debt to be thus provided for is ordinarily represented by bonds or debentures of some kind that are due in the comparatively remote future and which are not redeemable before maturity. The fund thus provided should be actually invested in interest-bearing securities and should be sufficiently increased each year to enable it to amount, with compound interest, to the entire sum represented by the debt at its maturity. The annual contribution that should be made to the fund may be ascertained by the compound interest tables based on the rate of interest expected to be realized, but this theoretical calculation will not work out in practice, because of the impossibility of investing the odd amounts to be dealt with, unless the in-

terest used in the calculation is so low that it can be realized from deposits in a savings bank.

In the case of a fund to provide for bonds due very far in the future, there is also the probability of a decided reduction in the rate of interest that can be realized on investments in the future, as it is a well-known fact that the rate of interest obtainable on safe investments has been steadily declining and will probably continue to do so. In making investments for this fund it is always preferable to purchase as far as possible the bonds for the redemption of which it was established. When this is done, the bonds are not cancelled but are held as an investment in the same way as any others would be and the coupons are collected and reinvested exactly as others are. Otherwise the fund would be deficient at its maturity, and in the meantime the general operation of the business would be relieved from the payment of interest on the bonds cancelled. When bonds are issued in series payable annually, the taking up of the bonds each year is altogether different from the establishment of a sinking fund and therefore the bonds thus taken up are charged off the books and cancelled.

91. *Sinking fund not chargeable to profit and loss.*—As a rule the business that issues bonds for the purpose of raising money to carry on its operations is obliged to invest, to a very large extent, all its available funds, whether derived from capital or bonds, in fixed assets and seldom has more than enough floating or active capital to take care of its active liabilities. When a business is confronted with the necessity of raising a definite sum each year and transforming it into a fixed asset such as a sinking fund must necessarily be, the only way it can do this is by accumulating the sum by not dis-

tributing its profits among the stockholders. For this reason it is said that the sinking fund must be paid for out of profits. While this is true in the sense that profits must furnish the money, it by no means follows that the sinking fund is chargeable to profit and loss as many, even among accountants claim. By analyzing the nature of a sinking fund we see that the fund is in reality a device for paying off the bonds and that as the original proceeds of the bonds when issued were not credited to profit account, the charge for their redemption must not be charged to it.

This is reasoning back to the original nature of the sinking fund. By carrying the subject forward to the final entries when the fund has performed its work we will reach the same conclusion. If we have charged the sinking fund off to profit and loss each year we must have set up a reserve account as a credit offset or else we would have been obliged to credit the sinking fund account, thus wiping it off the books while still holding the actual asset in the fund. If the reserve account has been set up we would have at the maturity of the bonds, say for $100,000, the following accounts open on the books:

Bonds, cr.	$100,000
Reserve for bonds, cr.	100,000
Sinking fund, dr.	100,000

Realizing on the sinking fund and with it paying off the bonds we would have still remaining a credit of $100,000 to "reserve for bonds" with no bonds outstanding and therefore no necessity for the reserve. The only way it can be disposed of is by a credit to profit and loss again. But it is manifest that there was no object in having charged it to profit and loss at all if it has now to be recredited.

The whole confusion arises from a failure to comprehend the true character of the sinking fund as a change in the name of an asset from cash to sinking fund without in any way changing its character as an asset.

If the money used to establish the sinking fund had been used to buy part of the bonds and retire them, charging the amount to bonds, there would be no question as to profit and loss. But the sinking fund is in effect no more than the debit side of the bond account carried in a separate account temporarily, for convenience only.

It might be thought that this is merely an academic question with no practical bearing, but it has a decidedly practical aspect, when we consider that it is the duty of an auditor to prepare a balance sheet which will tell the truth. If he puts into it a liability of reserve for bonds for a large amount he is depleting the surplus to that extent and thereby deceiving any stockholder who does not know enough about accounting to realize that the account is a fictitious one. In fact those accountants who defend the account do so by saying that the object is to so reduce the surplus that stockholders will not clamor for dividends, but they have never explained how the auditor became invested with the authority to deceive stockholders, even when he thinks he is doing it for their own good.

In order to meet their views and at the same time make a true statement, it is only necessary to divide the surplus into two parts, the first one being "fixed surplus" invested in the sinking fund bonds, and the second "free surplus," available for dividends, the sum of the two being extended in the balance sheet as "total surplus," thus giving the stockholder exact information as to the book value of his stock. The Inter-State

Commerce Commission in its bulletin of July 1, 1909, makes it obligatory on the railroads to do this, using the term "appropriated surplus" instead of fixed surplus. It is not necessary to open an account on the books for this appropriated surplus, as the division can be made on the balance sheet only.

A reserve account should always be a credit. It is the expression of the judgment of the managers of the business of the probable loss or expense that is likely to be met with. If the exact loss was known it could be charged off at once, but since there is an uncertainty about the amount that will be lost from depreciation, bad debts and other like items, the reserve account is set up to provide for the contingencies. When the charge is a definite one, such as "bond interest," it is a misnomer to call the account "reserve for bond interest." It should be "bond interest accrued."

A fund must always be a debit account, consisting simply of the setting aside of money or securities for a specific purpose. It is purely a financial expedient to ensure the possession of ready money to meet the object for which the fund is established when the necessity for its use arises. A reserve account can be set up without any fund to represent it, and a fund can be established without any offsetting reserve account. There is no necessary connection between them whatever.

CHAPTER XII

CAPITAL STOCK

92. *Capital of a partnership.*—The auditor has many problems to face in connection with the issue and the subsequent treatment of the capital stock of a company. Even if it is considered that he is not acting as an auditor but as a practical accountant when he supervises the original entries in a new corporation, his duties as auditor concern these entries when he is investigating a company whose books were opened up by others.

In a partnership the capital of the firm is the net worth, or the excess of the assets above the outside liabilities. In a corporation the matter is more complex, since the amount of the capital stock is fixed and is not necessarily the excess of the assets, there being often a difference that has to be adjusted. If the excess of the assets is greater than the proposed capital, the overplus must be credited to surplus, which will be available for dividends, unless it is specifically set aside for a definite purpose, in which event it should be distinctly "ear-marked" as an appropriated surplus.

93. *Capital of a corporation.*—If the excess of assets is less than the capital of the new company, it is necessary to adopt some plan by which an equilibrium can be reached. There are several ways of accomplishing this object. One is to increase the book valuation of the fixed asset, such as "plant," sufficiently to cover the deficit. This is, of course, very objectionable, as it puts false figures on the books, and the expedient is

still more opprobrious when several items are grouped in one account, such as "plant, franchises, etc." In a manufacturing company the items of patents and patterns are often swollen to an abnormal extent. As it is extremely difficult to arrive at the true value of either of these items, the auditor cannot always object to the valuation placed upon them by the board of directors. Or the deficit can be charged to good-will as an expression of the value of the business built up by the old firm, when the company is one that has taken over an old business. This is unquestionably the best plan, as the position is then honestly stated and any one examining the balance sheet of the company will be able to see what are the real tangible assets at a fair valuation, and can make up his own mind as to whether the good-will is or is not as valuable as it is rated. In a company starting an entirely new enterprise there can be no such thing as good-will to begin with. To the extent that any of the assets, including good-will, are overvalued the stock is said to be "watered." The only way to avoid watering the stock under these conditions is to have the stockholders donate a sufficient amount of their stock to cover the deficit, and to carry it as "treasury stock" until a surplus has been accumulated, out of which a stock dividend can be declared, returning the stock to them. The obvious objection to this is that the original stockholders would lose the advantage supposed to be gained by watering the stock.

94. *Opening the books of a corporation.*—The legal steps to be taken in incorporating a company are usually in charge of an attorney, but the auditor should know what they are in the state from which the charter is obtained, and should ascertain whether all the requirements have been met.

In opening the books of a company, many accountants use a number of accounts that are opened only to be at once closed, such as "subscription" and "plant and sundry assets." The modern American accountant does not look with favor on these useless accounts, but prefers to state the facts as they are with as little circumlocution as possible. He, therefore, makes his first entry to show the subscription to the stock, "subscribers, to capital stock" for the amount of the subscribed stock. If the number of subscribers is small, the names and subscriptions may be detailed on the journal and an account opened with each on the general ledger. If there are many of them the entry may say "as detailed in subscription register," which is a book containing the names and addresses of the subscribers and the amount of their respective subscriptions. From this book the amount of each man's subscription is posted to the debit of his account in a "subscription ledger." Where there are many payments, especially where the stock is called up in installments, it is well to provide a column in the cash book for subscribers. When a man's subscription is fully paid, whether a certificate is issued to him or not, he should be credited on the "stockholders' ledger" with the face value of his stock. In many of the books kept in stock by the stationers, the stockholders are debited with their holdings, which is a manifest error and arises from a confusion between the functions of a subscription ledger and a stock ledger. The account of capital stock on the general ledger is of necessity a credit account. The stock ledger is merely the detail of the general ledger account, and it is easily seen that the parts must be of the same nature as the whole.

It is better to have a specially ruled stockholders' ledger, but it is not absolutely necessary. The ordinary

form of ledger will do if the columns are double. In each account, are shown on the credit side the date and number of the certificate, the source from which obtained, the number of shares and the face value. The source is either original, in the case of the original subscriber or the name of the person from whom transferred. When stock is transferred the stub of the new stock certificate shows from whom it came, and the old certificate should also show the name of the person and the number of the certificate to whom it goes. In this way the stock can be traced either forward or backward. The stock ledger account of the transferrer shows on the debit side the name of the party to whom transferred, the number of the certificate surrendered, the number of shares transferred and their face value. If the entire number of shares shown by the surrendered certificate is not transferred the balance retained should be shown by a debit to "self" and a credit of the same amount for the certificate issued for them. In every case where a transfer is made the whole certificate transferred should be cancelled and charged out and a corresponding number of shares issued and credited. An exception to this rule may be made in the case of treasury or trustee stock from which a large number of transfers may be made. As this stock remains under the control of the office the account with it can be only kept on the books, and only the transferred stock need be represented by actual certificates. It is necessary to remember that the title to stock resides in the record on the books and that the certificate is only the evidence of that title and is not the stock itself. The total of the balances on the stock ledger must always be the balance of the capital stock account on the general ledger.

95. ***Payment for stock.***—The stock having been subscribed, it remains for the auditor to see that it has been properly paid for. This is evidenced by the credits to the subscribers. When property of any kind is turned over in payment, a journal entry is made specifying the property turned over, at its valuation, and crediting the subscribers who have transferred it. Reference must be made to the records of the board of directors authorizing the transaction and the auditor should examine the minute book to see that the record sufficiently describes the property and that the offer to transfer it to the company, for the stock, was properly made and accepted. He has nothing to do with the real value of the property, except in states which require that the value should be equal to the par value of the stock given for it. If there were a manifest difference, it would then be his duty to call attention to the fact that the stock was not fully paid up.

If stock is sold at varying prices, as frequently happens in the case of mining companies, the auditor must consult the minutes of the board to ascertain whether the officers were authorized to sell at the prices shown by the books. If any officer or employee receives all or a part of his salary in stock when it is being sold at a discount to others, the salary account should be charged with the cash value only and discount on stock with the difference between that and the face.

96. *Verification of shares outstanding.*—The auditor should always examine the stock certificate book and check up the stubs with the stock ledger in order to see that all the certificates issued are represented there, and he should take a trial balance of that ledger to see that the total shares issued agree with the record of stock issued on the general ledger, until all the shares

is finally issued. After that an occasional test of the outstanding stock would be all that was requisite. It is not necessary for him, as a general thing, to examine the transfers. The stock that has been transferred should always be pasted back on the stub from which it was taken. The stubs that have no certificate attached would then represent the outstanding stock, and if their total agrees with the capital stock account, the auditor's duties would be ended. If the total does not agree, the easiest way to find the discrepancy is to list the open stubs in numerical order; numbers and amounts only, and then to post from the stock ledger the pages on which the numbers appear credited to the stockholders, being careful to note that the amounts are the same. This will detect any number that had not been posted or any appearing on the ledger and not represented by an open stub.

If a trust company is the transfer agent or registrar of the stock, the auditor is relieved from the necessity of verifying the outstanding shares.

97. *Stock sold at a discount or premium.*—When original stock is sold by the company at a discount for cash and the proceeds invested in a fixed asset such as a manufacturing plant, the usual custom is to charge the discount to the cost of the asset. This is manifestly wrong, since it puts a fictitious value on the books, but it is extremely difficult to determine just what should be done with the discount in those cases where the stock is not regularly sold at a discount. The proper charge to "discount on stock," while it accurately represents the condition, causes a very awkward item to appear on the balance sheet, which it would be very difficult to persuade the directors to allow. If it has to be covered up at all, the furthest stretch, the auditor would appear

justified in countenancing, would be a charge to some such account as "special plant expense" to be written off against profits in a very few years.

When stock is issued directly for the property, the auditor's duty, theoretically, is to follow the same course, In practice, he will find it very difficult to do so, because he has usually no way to prove what the real value of the property is, unless the case is a very simple one and the property is easily appraised. He is, therefore, usually obliged to let the judgment of the board of directors determine the value, unless there are clear reasons for him to think otherwise, but even then he must be very positive that his conclusions are correct before he ventures to criticise the action taken.

If stock is sold at a premium the disposition of the premium depends on the conditions. If it is intended thus to provide for extraordinary organization expenses, the premium may be offset against those expenses, the difference if any being carried into the surplus account. If provision is made in the by-laws or articles of association for the consecration of the premium to a permanent surplus not available for dividends it should be earmarked by being credited to an account called "permanent surplus," which is a better term than "special surplus." In the case of a national bank the term surplus is sufficient, since it has a special meaning, not being under the control of the directors but of the comptroller. If there is no provision with regard to the premium, it is unquestionably an ordinary surplus, though it is contributed and not earned, and would be under the control of the directors for purposes of dividend. In the absence of express provisions the mere calling it a special reserve would have no effect on its real character as a surplus.

98. *Different classes of stock make great care necessary.*—The duties of the auditor of a company that has different classes of stock make it necessary for him to prevent injustice being done one class to the advantage of another. If there is non-cumulative preferred stock, he must be very careful in his examination of the closing entries for the year. If there are not profits enough to pay the preferred dividend for the year he must satisfy himself that all the elements of the revenue account are properly stated and that the profits are really as small as they appear. But it may not appear to him to be equally important to ascertain whether the profits are not seriously overstated if the preferred dividend is paid and there is also a considerable dividend paid on the common stock. Yet it may be that through a manipulation of the inventory, or in some other way, the profits of the year are swollen to an abnormal amount at the expense of the succeeding year, in which the preferred dividend may consequently have to be passed.

99. *Unpaid dividends on cumulative preferred stock.*—In the case of cumulative preferred stock on which all the dividends have not been paid, he must know how to treat the unpaid dividends on his statements. If the dividends have been earned, that is, if there is a real and unimpaired surplus of profits on hand, there is no question but that there is an actual liability to the preferred stockholders to the extent of the surplus that is applicable to such dividends, and this liability should be shown on the balance sheet. But if there is no divisible surplus, there is no liability actually existing, since dividends can be paid only out of surplus, but a contingent liability exists to pay the dividend if a surplus is earned in the future. In a

balance sheet intended for creditors there is no occasion to show this contingent liability even as a memorandum, because the eventual creation of the liability, of necessity, means the creation of surplus funds out of which it would be paid. In a balance sheet intended for the stockholders, however, it must be shown, because the preferred stockholders are entitled to know that they have a lien on the future profits to that extent, and the common stockholders have equal right to be warned that they cannot expect dividends until the accrued preference dividends are provided for. As it is impossible to show this liability in the actual total without showing a corresponding deficit in the asset column, it can only be indicated by a note or memorandum appended to the balance sheet.

100. ***Treasury stock.***—The term treasury stock is employed very loosely and often erroneously. When stock has once been legally issued for full value and has been donated to the company or purchased by it and held subject to the disposal of the board of directors, it is, at least in theory, worth its face value and can be carried as an asset. This is true treasury stock. When the stock is only that which has not been subscribed for at all, or if subscribed for has not been taken up and paid for, it is not treasury stock, but unsubscribed or unissued stock and has no asset value whatever, since nothing has been paid for it. Instead of an asset it is, as Mr. Conyngton says, "the privilege of creating a liability." The auditor should note this difference and not be led into the error of wrongly designating the stock in the hands of the company.

The auditor should also know what the status of treasury stock is, in the state from which the company's charter is derived, as in some states the possession of

the stock by the company acts as a cancellation and it cannot be reissued. Again, in some states the stock having been once fully paid in theory may be put in the treasury and sold at a discount without liability on the part of the purchaser, while in others any insufficiency in the original payment for the stock will inhere in the treasury stock and make the purchaser liable to outside creditors for the discount. To avoid this the stock is sometimes placed in the name of a trustee, but this is usually so transparent a subterfuge that no advantage is gained except the privilege of reissue.

Stock of its own held by the company or by a trustee for the company is no longer active, that is, it cannot vote, nor is it entitled to any dividend. The latter provision is obvious, since if a dividend were paid on it out of the profits it would at once return to the credit of the surplus account, out of which it had just been paid.

101. *"Donated working capital" account.*—Treasury stock usually results from a donation for the purpose of providing working capital for development work. The charge to treasury stock account should therefore be offset by a credit to "donated working capital." If the stock is sold at a discount, treasury stock should be credited at the face value and donated working capital debited with the discount, either directly or by first charging it to "discount on stock." The reason for this is that the real working capital is only the actual money realized and used in the development of the property and the discount lost on the sale is a lessening of the original nominal value of this fund. The balance of "donated working capital" account would then always be equal to the stock in the treasury at par, plus the

amount of cash realized on stock sold, and when all the stock is sold it would be the actual cash realized.

As the money thus provided is expended it is charged to the various accounts representing the development work, until it is finished. These accounts are then closed out against the donated working capital account. This is the only logical method, as the working capital was donated for this express purpose and the books should show that the purpose was carried out. It does not seem that the donated stock is in any sense a surplus, as some claim, unless it is specifically given for that purpose by the stockholders.

102. *Secret reserves.*—We have now examined all the items that usually appear on a balance sheet, except the surplus, the consideration of which will naturally be in order after the steps leading up to it have been investigated.

The balance sheet, as we have seen, is a statement of the condition of business as shown by the ledger, the various items being entered at book value. If the auditor is satisfied that these values are such that the condition is made to appear more favorable than it really is, there is no question as to his duty. He must insist that the figures be adjusted to show the real condition. But if the contrary condition exists and the position of the business is shown as less favorable than it really is, there is a difference of opinion among authorities as to the duty of the auditor. The business is then said to possess a "secret reserve." It may take several forms, but in general terms it consists in undervaluing the assets or overvaluing the liabilities. The object in establishing it is to provide out of excessive profits of prosperous years a fund which can be

drawn upon to increase the profits of less prosperous ones, a sort of governor to make the machinery of the business appear to be running at a nearly uniform rate. No one can dispute that the establishment of the reserve is good policy. The contention is not as to the advisability of the reserve itself, but whether it should be secret, and if so, whether the manager is justified in establishing it without the knowledge of the directors, or whether the directors only should be authorized to establish it without the knowledge of the other stockholders.

Mr. Francis W. Pixley, one of the most noted accounting authorities in Great Britain, said at St. Louis in 1904;

I am of the opinion that what are known as secret reserves are right and proper, and tend toward the maintenance of the company as a permanent institution, and that in fact, without these secret reserves it is quite impossible, having regard to the fluctuation of both financial and trading operations, for any company to exist beyond a very limited period. At the same time these reserves must be honestly made and in the interests of the company. For directors to create secret reserves without the object of withholding profits legitimately earned from distribution to the stockholders, so as to induce them to dispose of their holdings and acquire such holdings for themselves, is as flagrant an act of dishonesty as can be conceived; and should auditors have any reason to believe that reserves are being created through improper motives they should protest against this, and if necessary so report to their shareholders. Where, however, reserves are made bona fide in the interests of the company,—although the auditors may consider them beyond what may be actually required—they are in my opinion justified in passing them without comment, knowing that in so doing, the financial position of the company will be strengthened.

It is only fair to Mr. Pixley to say that he takes the somewhat remarkable position that "the duties of auditors of a company are to that company as an institution and not to its individual shareholders."

Mr. A. Lowes Dickinson says in this connection:

It is obviously within the discretion of the managers or directors to make reserves to meet possible contingencies. Inasmuch as the majority of industrial corporations do not publish their gross earnings such reserves can easily be made and *are* made continually in a form in which they do not appear in any way in the accounts, and are known therefore only to the directors and managers. Each case must be judged on its own merits. Where the directors or managers have exercised a wise discretion in providing in advance for contingent losses which are incident to the nature of the business and cannot, from a reasonable point of view, be considered in excess of the amount which a wise foresight would provide, it would seem that no exception should be taken to the undisclosed portion thereof. Where, however, reserves are made largely in excess of any possible contingencies the amounts provided should be disclosed so that all those interested may be in a position to form a reasonably correct opinion as to the financial position. For instance a business such as banking is peculiarly liable to large and unexpected losses, the disclosure of which might prejudicially affect its credit and possibly cause a disaster out of all proportion to the cause; and it is obviously sound policy to accumulate such ample reserves as will enable losses to be met without any apparent disturbance of normal conditions, but as far as the majority of corporations and businesses are concerned, publicity in such matters is undoubtedly most desirable, and all reserves to meet contingencies which may occur in the future should be fully disclosed.

Both these authorities seem to be guilty of what the lawyers call a *non sequitur,* since they reason that because it is conceded to be a good thing to establish ade-

quate reserves against contingencies, therefore secret reserves are to be allowed, provided a wise discretion is observed, but they do not say what a wise discretion is, nor who is to be the judge of its wisdom.

103. *Injustice worked by secret reserves.*—Those who defend the establishment of a secret reserve seem to look upon the bank or company as an unchanging entity, and claim that it is wise to conceal abnormally large profits one year so as to provide against the necessity of showing unusual losses in another year. In the case of a close corporation or of a partnership whose stockholders or members know all about the business, there would be no serious objection, but there would also be no special reason for doing it. It would then be about on a level with the practice of the suburbanite who sets his watch five minutes ahead so that he may be sure to catch his train. In the case of a company whose stock is somewhat scattered, and may be sold at any time on the basis of the statements furnished to the stockholders, it seems impossible to find any justification for the practice. The seller of such stock is unquestionably defrauded out of the increased price that he could have obtained if the true condition had been known to him and to the buyer. If the buyer happens to be one of those on the inside, with knowledge of the secret reserve while the seller is ignorant of it, the injustice to the later is still more flagrant.

To obtain a clearer idea of the justice of such a practice it is necessary only to look at the true nature of a corporation. It is not probable that any one would defend the managing partner of an ordinary copartnership if he deliberately understated the profits so as to prevent his partners from drawing out a greater dividend than he thought proper. But the president and

directors of a corporation are simply the managers of a partnership affair, the act of incorporation being for the purpose of limiting the liability and for greater convenience of action, but not in any way causing the company to differ from an ordinary partnership other than in these points.

The auditor who is acting for the stockholders of a company would not seem to be justified in signing a certificate to a statement which contains a secret reserve or any other element that is not exactly in accordance with the facts. Not only is he bound to tell the entire truth for its own sake, but he is also under obligations to give all the stockholders all the information in his power. Those accountants who take a different view of this question defend their course on the ground that they are employed by the president and directors of the company and are not supposed to criticise their management of the business. While it is true that it would be better to follow the English practice and have the auditor appointed by the stockholders as their special representative, it does not seem clear that the appointment by the directors absolves the auditor from his duty to the stockholders. Although not made directly to them, his report is to be used with the stockholders, and it should be as carefully prepared as if made originally to them and should contain nothing which would cause any stockholder to make an incorrect deduction as to the true condition of the company.

It may be objected that the secret reserve is often contained in items that have temporarily or permanently risen in market value above the cost at which they are carried on the books, and that the conservative man is opposed to writing up the book value and showing an unrealized profit. The answer to this objection is that

exception is not taken to the reserve, itself, but only to the concealment of it. It is not necessary to write up the value on the books if in the balance sheet or other statements submitted to stockholders the increased value is indicated in a parenthesis or note.

The point that it is intended to make clear is that the business belongs to the stockholders and that they are entitled to all the information about it that it is possible to give them. If they make a foolish use of it by insisting on the payment of unwise dividends or in any other way, it is no one's concern but theirs, and without their express consent no one is authorized to constitute himself their guardian in the administration of their property.

CHAPTER XIII

THE REVENUE ACCOUNT

104. *Nominal accounts showing results of operations.* —The subjects so far treated have been the items appearing on the balance sheet, that is, the assets and liabilities, or real accounts. The auditor is equally concerned with what are called the nominal accounts, those which express the operations of the business and the result of these operations in eventual profit or loss. At the end of any fiscal period these accounts are brought together in (closed into) a statement of the transactions of the period, which is called the "revenue account." This is subdivided into tables corresponding with the different departments of the business. The purpose of this division is to allow of the tracing of the relations between the same elements of a business for different periods, so that an increase or decrease of the final net profit may be explained by the increase or decrease of the various elements. These tables are usually in four classes, exhibiting the results of the manufacturing, of the trading or selling, and the administrative or proprietorship departments and the final disposition of profits.

In making up these tables there is room for great difference of opinion. Some will put more into one table than into another and there is no final authority for determining how each table shall be constructed. The only way for the auditor to make up his own mind is to imagine that each table represents the statement of

an individual, charged with the duty of manufacturing, selling or financiering, that each individual is anxious to make the best possible showing for his department, and that they have all agreed to leave the decision to his arbitration. He must then decide what are the essential elements of the manufacturing, the trading and the administration and make each one of them assume the burden that belongs to him. For this reason he should understand the general principles which will guide him in the distribution of the items, and while he may not follow the same plan in different cases, he should always do so in making statements for different periods of the same business; otherwise his basis of comparison between different periods will be different and, therefore, may be misleading.

The various elements of the revenue account and the way in which they appear in it will be taken up under their appropriate headings in the following pages. It is mentioned here only because it is the end and aim of all the nominal accounts and must be kept in mind in treating of them.

105. *Sales.*—It is hardly necessary to say that sales should be kept in an entirely separate account from purchases. The old-fashioned "merchandise account," to which purchases were charged and sales credited, was not accurate, since "returned sales" appeared as purchases and "returned purchases" as sales, but it is usually accurate enough to have one sales account, the total credits being "gross sales," the debits being "returned sales" and the balance of the account "net sales." Rebates and allowances should, however, be kept in a separate account, as it is important to know how much they amount to. In the revenue account they appear as deductions from the net sales, not as charges. The same

view may be taken of "out freight"; in fact, this should be the method if part of the sales are made delivered and part not, in order to reduce them all to the same basis, it being only reasonable to assume that the gross selling price of goods delivered will be greater than the price of goods not delivered by the amount of the freight.

There are a number of ways to record the sales. The auditor should study the different methods so that he will be able to recommend the one which he considers best adapted to the particular business which he is considering. He should avoid adopting any favorite method or any special form, or he may be led to sacrifice the interests of his clients, which a little further study would enable him to conserve. If he thinks that a retail store can use a billing system both as a sales book and the debit side of a customer's ledger, he should not hesitate to recommend the purchase of the necessary billing machine, unless he can devise a method by which the same results can be reached with an ordinary typewriter or other device.

When salesmen are paid a commission on their net sales, it is necessary to keep an account with each one, showing the amount of his sales. The auditor should advise the adoption of a plan by which these records can be kept in columns, either as part of the sales book or sheet itself, or identified with it by the numbers, a column being provided for sales on which no commissions are paid, in order to get all the sales into the record. This record will then balance with the sales record and prove that all the sales made by the salesmen have been included.

106. *The practice with branches.*—When the concern has branches, the auditor should be very careful to investigate the way in which shipments to them are handled

on the books, especially where the goods are billed to the branches at anything above the actual cost. It is the practice of some houses to bill goods to their branches at the regular selling price in order to keep them in ignorance of the actual cost, or any approximation to it. As far as the sales go, they treat the branches exactly as they do any ordinary customer. If the manager of the home office wishes to make an especially good showing for the year or needs something to offset a bad state of affairs in the regular business, it is easy for him to load up the branches towards the end of the year with abnormally large stocks of goods, thus increasing his sales, his nominal profits and his assets. When goods are billed to branches at a profit the amount of all the branch inventories should be left in the sales account as an offsetting credit, when that account is covered into profit and loss account. In other words the sales to the branches as far as goods on hand there are concerned should be treated as no sales, except for the convenience of bookkeeping, and should certainly not be allowed to affect the profits of the year. The branch inventories should then be taken into the home office inventory at cost.

Where it is the practice to figure percentages on the various departments of the business, as for instance the percentage of selling expense to the total sales, the shipments to the branches should not be included in the regular sales at all but should be carried in a separate account of "sales to branches." When the goods are billed at a profit the sales account of the home office gets the benefit of them without incurring any selling expense, and the percentage of the latter to total sales is materially reduced. In a lesser degree the same is true when the goods are billed at cost. By carrying the branch in a

separate account a better idea is also obtained of the profit of the branches.

107. *Installment sales.*—When part of the goods are sold on the installment plan these sales should be kept separate from the regular sales which are made virtually on a cash basis. Strictly speaking, the difference between the installment price and the cash price should be credited to interest and it should be spread out as an earning over the life of the contract. Practically this is seldom or never done, as it is too much trouble for the advantage gained, since the excess profit in proportion to the cost of the goods sold will show the same result. The increased cost of collecting these accounts would be an offset to this extra first profit. The sales should be credited to "installment sales" and charged to "installment debtors." In closing the books at the end of the year the whole amount of the credit to installment sales should not be credited to revenue, even if it be conceded that all the debtors are good and will eventually pay, since the expense of collecting the accounts has to be charged against the profits nominally made so far. Part of the credit to installment sales should be carried over to the next year to represent the liability for this expense and also for accounts that may prove to be bad. On the ground that in such cases, only the amount actually paid can be depended on, the credit carried over would be the same in amount as the unpaid balance to the debit of installment debtors, which would mean that each year would take credit for no profit on such sales except to the extent to which they had been paid for during the year. It would depend largely on the character of the business as to which view should be taken, one element to be considered being the value of the goods if returned through default of the purchaser.

The auditor frequently finds that full credit has been taken in the revenue accounts for sales made for future delivery. If the goods are actually on hand and the contract of sale is of such a kind that it can be sued on, and the goods are of such staple character that there is no danger of their being refused as not conforming to standard, the auditor would be justified in allowing the credit, if he was careful to see that the goods were not included in the inventory and also charged to the customer. Due allowance should be made for loss of interest if the amount is large enough to make it a matter of any consequence. But if delivery is an essential part of the contract or if there is any other element that is not absolutely fixed and determined, the sale cannot be said to be completed, and therefore no profit can be taken. Dicksee has laid down the correct principle; "the profit on the sale of goods should be taken credit for at the time when the sale actually occurs; and where it is an essential portion of the contract of sale that the goods shall not be delivered until some future date, then the actual sale would certainly appear to be at the date of delivery, and not at the date of booking the order."

108. *Two ways of treating sales.*—In the revenue account sales may be treated in either of two ways. They may be credited net to the manufacturing table and the balance of that table be brought down as manufacturing profit, or they may be omitted there and the net total of that table be charged to the trading or selling table as manufacturing cost. In the latter case the sales are credited to the trading table and the trading expenses charged against them. The net result is, of course, the same and either method may be adopted, provided the method in any particular business is the same from one year to another.

109. *Cash discount.*—Cash discount is now, almost universally, carried in a special column in the cash-book, in one of two ways, both of which illustrate the modern tendency toward greater convenience, and the saving of labor in spite of the fact that the formal rules of book-keeping may be violated. The special column is placed on the same side of the book as the item to which the discount belongs. If the principal item is entered at its face the discount column becomes an element of the cash balance, but it is temporarily, for the sake of convenience, on the wrong side, being transferred to its proper side at the end of the month. If the net cash involved is entered, the discount becomes a journal entry, pure and simple, carried on the cash-book for convenience only.

There are two reasons for either of these methods, the saving of the labor of repeating the names, whether the discount is carried on the correct side of the cash-book or is entered in the journal itself, and the bringing of the discount into close relation to the item to which it belongs. The auditor is not specially concerned with the first reason, but he is with the second, since the juxtaposition of the two items makes any manipulation of the discount much more difficult than it would be if they were on different pages or in different books.

110. *Proper treatment of cash discount in the revenue account.*—Cash discount is not usually taken into the accounts, in this country, until the actual payment is made. It is sometimes claimed that the discount on accounts still on the books should be allowed for in making up the revenue account. This is especially true in England, where conditions are much more likely to be stable than they are here and the amount of discount to be given or taken is more to be depended upon, and where also the time in which cash discount is allowed is longer than with

us. In addition to the uncertainty as to the amount, American accountants claim that the discount belongs, as an expense or an earning, in the period in which it is actually paid or received and that it should not be anticipated. The arguments for the two views are so nearly balanced that the auditor is at liberty to make up his own mind or to adopt the view taken by his client, unless there are peculiar circumstances making it untenable.

Considerable difference of opinion exists among accountants as well as merchants and manufacturers as to the proper treatment of cash discount in the revenue account. Some claim that it is a reduction in the price of the goods, and therefore deducted from purchases and sales respectively. The argument is that if goods are purchased for $98 spot cash, they would be charged out at that price, and that there is no essential difference between that transaction and one in which goods are bought for $100 and paid for in ten days at 2 per cent discount.

Others hold the opinion that it is an element of the financing of the business and therefore should be charged or credited in the third, or profit and loss, table as an expense or profit on the capital, like interest on bank loans. The usual reason for giving a discount is to realize quickly on sales, so that the money can be used at once in the business. This is the principal reason, as the claim that it is for the purpose of preventing the undue accumulation of accounts on the part of customers that are not thoroughly trustworthy is refuted by the fact that the untrustworthy customers seldom or never take the discount. If the business had sufficient capital to allow it to carry all its accounts for sixty days, there would be no object in offering a cash discount. This is

the case with some houses whose bills are all made at a flat rate. But, as it is the duty of capital to furnish all the money necessary to run the business to the best advantage, it is only right that it should stand the expense of providing funds through the medium of discounts, as it certainly does when it provides them through bank loans or any other financial device. In a similar way, if capital furnishes the business with sufficient funds to enable it to take advantage of discounts offered to it, capital is entitled to the credit of the profit thus effected.

Another argument for this view is that there is no accounting difference between the selling of goods on open account payable in thirty days or for a note payable in the same time. If notes were taken for all goods sold and the proposition were made to the makers of these notes offering to let them pay them in ten days at two per cent off, there would seem to be no doubt that the discount would then be treated as interest. It also sometimes happens that a merchant will raise money by selling part of his open accounts to a capitalist at two per cent off their face, in which case the discount paid would certainly be interest. Those who take the second view claim that there is no difference between selling on account to a capitalist and allowing the customer, himself to buy it before maturity as far as the disposition of the discount in the accounts is concerned.

111. *Two accounts with discount—on sales and on purchases.*—There should be two accounts kept with discount, one for "discount allowed on sales" and the other "discount taken on purchases," as it is usually very important to know the total amount of each, which a combined account would not show. It is still more important not to combine discount with ordinary interest, as it is often essential to know how much interest is paid

out on loans from banks or others, or is realized from the loaning of idle funds. In one concern where it was necessary to carry over large sums from one season to another, the money was loaned in the idle months and the interest received was credited to a combined account of "discount and interest." The net balance of this account at the end of the year was less than $60 debit, which made it appear as an account of very slight consequence. An analysis of it showed that it was really of great importance, as it developed that the interest received on money loaned was over $7,000 and the discount on sales was a trifle more. The analysis was of value as the question had come up whether any appreciable amount could be saved by selling the goods net at thirty days.

112. *Cash discount and trade discount different.*—Cash discount should not be confused with trade discount. The latter is a device by which the actual price can be varied without interfering with the list price, which is often the retail price. Small fluctuations in the market can be expressed most readily in this way, and for that reason the trade discount is usually expressed in a cumulative way instead of as one rate. Small variations can be made by adding or dropping a small discount at the end. It also allows of discrimination in favor of some especially desirable customer by giving him an additional rate, without disturbing the previous rates which are given to the general trade.

Trade discount is always a deduction from the price and the net amount after it is deducted is the actual principal and is the amount taken as the face of the bill. In some lines what is really trade discount is made dependent on prompt payment, making it in a sense cash discount. The distinction that is usually made is that

cash discount is what can reasonably be considered a fair equivalent for the use of the money and that anything larger than this should be considered trade discount.

The auditor is not supposed to prove all the cash discounts or even to see that the trade discounts are properly deducted from the list prices in every case. But he should have a knowledge of what the custom of the house is in allowing cash discounts and should scrutinize in a general way those that are shown in the cash-book to see that the bookkeeper has not run in discounts that were not really given and taken out an equivalent amount in currency. If he has any reason to suspect that this is the case he should look up the correspondence or get the original deposit ticket from the bank. The same general scrutiny should be given to accounts payable on which no discount has been taken so far as the books show.

In regard to trade discounts the auditor is not usually supposed to do much, but he should have a general knowledge of the prices of commodities so that he may detect any flagrant irregularities. It is usually taken for granted that the proper proof of payment is sufficient evidence of the correctness of a purchase account, but it may happen that the fact that a voucher is made out and paid to the right party and that it corresponds with the amount due to the party on the books and that the credit is for goods actually received and put into stock does not necessarily prove that it is correct. Some years ago a bookkeeper went to a concern from whom his house bought large bills which were for goods on which there was a trade discount of 50 per cent and asked them to bill the goods at list, saying that the head of the house had a queer notion that he would pay the list price and then take a check back for the 50 per

cent discount. As the house was a very valuable customer they agreed to do it, and the bookkeeper for several months used to bring in a check for the list price of the goods bought the previous months and would receive a check for half the amount in return. This check he used to replace currency that he had abstracted. The auditor at his regular examination noticed that no discount was taken off the bills of this particular concern and made some inquiries with regard to it, with the result that the whole scheme was discovered.

113. *Vouchers for values received.*—A voucher has been defined as a document which certifies or verifies the correctness of charges for values paid out or parted with or of credit for values received.

Taking up first the latter class, the credits for values received, the difficulty encountered by the auditor in satisfying himself of the correctness of the reported receipts is that any manipulation of the accounts in this respect would, of necessity, be in the nature of an omission of a proper credit, which is much harder to guard against than the commission of an overt fraud such as the manufacture of a false voucher for a payment. We have seen that no system of stubs or other copies of receipts given out for money taken in, is of any value unless a different person makes out the receipt from the one who receives the money. The auditor is, therefore, forced to be content with proving the accuracy of the results, as by sending statements to customers, to the best of his ability, but he should absolutely and positively insist that a system of internal checks be at once instituted, and he should put himself on record in writing that he will not otherwise be responsible for any manipulations of the cash receipts.

114. *Vouchers for payments.*—Vouchers for pay-

ments are made in many different forms, the best of them probably being the improved voucher-check on which the endorsement acts as a receipt. The invoices which are paid by the check should be identified with it, for it must not be forgotten that a voucher is not only the formal blank on which the payment is registered, but anything which "certifies or verifies the correctness of charges for values paid out," and that therefore the supporting invoices are a necessary part of the voucher. The "invoice register," "accounts payable register," or whatever else it is called, should show the manner of the payment in such a way as to identify the check. The easiest and safest way to audit them is for the auditor to check the invoices to the register, and at the same time to call the name and the check number to an assistant who will check the cash-book, calling back the amount. Incidentally the remark may be made here to apply generally to all cases, that when one person is calling amounts to another, it should always be the assistant that calls to the principal, unless they are both equally experienced.

It sometimes happens that an apparent payment has been made to a concern as proved by documentary evidence, and yet that no such money was really received. Some time ago two men who were doing a small business in the contracting and building line as partners, quarreled and employed an accountant to settle upon their respective interests. In checking up their contracts one was found that called for a house to cost $1,600 on which was noted a payment of $400 dated the same day as the contract, but there was no entry on the cash-book to show that the money had ever been turned into the business. When their attention was called to this circumstance they said it was all right,

that the contract was intended to be for only $1,200, but had been made for $1,600 to enable the owner of the property to make a larger loan from a building association. They stated, and there is abundance of other evidence to show that it was a common practice among borrowers from building and loan associations to thus make contracts that were overvalued. In examining the papers of a building and loan association the auditor would have no means of detecting such a trick, and yet its importance is shown by the fact that such fraudulent transactions were the cause of large acquisitions under foreclosure by the associations.

In such a case as this the auditor would have to be satisfied with the explanation made, provided it was corroborated by some other person than the one who receipted for the money.

Building and loan associations have furnished many examples of the fact that auditors cannot always depend on the true character of what are apparently perfect vouchers. In one of these associations the loans as shown by the books were certified to by a firm of public accountants and by the state examiner and yet the loan account concealed a large defalcation. This arose from the easy-going way a large number of people have of trusting implicitly to the officer of a company whom they have long known. It was discovered that many of the loans that were carried as active had been paid off long before, but the borrowers had left all the notes and other papers in the hands of the secretary without a mark on them to show that they were paid and cancelled. The auditors and the inspector, finding all the securities intact, were not to be blamed for supposing that the loans were still active, especially as the secretary had continued to make the necessary

payments with sufficient regularity to prevent any inquiry into the matter. Such carelessness on the part of the payers of the notes would seem incredible, if we did not find similar instances constantly.

In another building association case the treasurer had absconded. Accountants put to work on the books found everything apparently in good shape, with warrants all paid and nearly enough money on hand to meet the requirements of the cash-book balance. It was a mystery why the treasurer had fled until it was discovered that a large number of the warrants drawn by the secretary on the treasurer and marked "paid," had not been fully paid at all. The treasurer's plan was this: When a warrant was presented to him for, say $250, he would tell the holder that the association was a little short of funds and that he would pay him $50 on account, and would give him the balance when collections came in. In the meantime he would make the holder endorse the warrant in blank and surrender possession of it. He would then turn the warrant in to the secretary as paid in full and would hold the $200 as long as he was able to pacify the creditor. By repeating the process with successive holders of warrants he was able to accumulate about $8,000, and there is no telling how much more he would have obtained if some of the creditors had not complained to the secretary, whose inquiries caused the treasurer to abscond. An auditor could not have been blamed if he had passed the accounts as correct under these circumstances, especially as there is a grave doubt whether the warrant holders had not released the association and unknowingly accepted the personal responsibility of the treasurer.

115. *Vouchers should be required in all cases.*—If

the auditor finds that it is the custom of the cashier to give money to officers or employees without taking some kind of receipt, however informal, he should vigorously protest against the practice and if possible bring about its discontinuance. It is not necessary to have a formal receipt, as a simple debit ticket initialed by the person receiving the money is amply sufficient. The cashier who does not require some such voucher is liable to encounter serious trouble some time, and the auditor is in a position to demand that he be protected.

As journal entries can often be made to take the place of cash that is abstracted, it is as important to have vouchers for them as it is to have vouchers for cash payments, except in the case of those that cannot in any way be used to replace cash. The auditor should exercise equal care in scrutinizing them.

Every voucher should be examined to see that it is approved by the properly authorized persons, and the auditor should mark it with his initials in ink or with a rubber stamp in order that it may not be presented to him twice. This will apply with equal force to the office manager who signs checks when vouchers are presented to him. One such manager, who was in the habit of signing checks every week for a large number of freight bills to be paid in currency to a certain railroad, was always careful to have a list of the bills given to him with each check. He would check and add the list but would not mark the bills in any way. He changed his methods when a professional auditor showed him that the bookkeeper had regularly neglected to pay at least one bill each week and had presented him the omitted bills the next week for payment again, managing in this way to add about fifty dollars a week to his salary.

This leads to the remark that an auditor should call attention to any loose methods that he may notice in an office, whether he suspects that any advantage is being taken of them or not. For instance, if customers are instructed to make their checks payable to the treasurer of a company, it often happens that they make them to the order of his individual name without adding his title. The treasurer is very unwise to endorse these checks in blank unless the depositing stamp of the company has first been placed on them, because the bookkeeper can then use them for deposit to his own credit without the necessity of forging the treasurer's name.

116. *Examination of expense vouchers.*—When a column is carried in the cash-book for "expense" all vouchers for the items in that column should be carefully examined. In one instance, two checks for $150 each were found, during an annual audit, that were made in favor of the bookkeeper and entered in the expense column. As the usual way of paying him his salary was to credit his account on the ledger, and as his entire salary had been thus credited him for the year, the auditor called the attention of the president of the company to these suspicious entries. In this case the entries were authorized and were made in this way so that other employees would not know that his salary had been increased while theirs were not. But it would have been a serious oversight on the part of the auditor if he had not noticed the items.

When vouchers are missing it is sometimes permissible to accept in their place cancelled checks received from the bank, but they are at best poor substitutes for regular vouchers.

117. *Examination of pay rolls.*—When pay rolls are to be examined by the auditor, it is manifestly im-

possible for him to verify all, or in fact any, of the signatures of the workingmen. Often, indeed, the men do not sign any roll but are paid in envelopes in the presence of witnesses. It is sufficient for the purpose of the auditor if the pay roll is made up by one person, the envelopes filled by him and another, working together, and the rolls paid in the presence of a third person, usually the foreman of the whole shop or of each department in turn. Each of these persons should certify to the correctness of the roll, as far as he knows it—the roll itself and also to the fact of its having been paid. It is scarcely possible that there should be collusion between three persons. In fact, it is generally considered safe so to arrange a system that it will require collusion between two to defraud. Although it sometimes happens, it is a very rare occurrence that one man will corrupt another, largely perhaps because the corrupt man is afraid to put himself in the power of another, who may not be willing to follow him and may inform on him. In the case of the pay rolls the auditor should add them but he is very unwise if he takes any other responsibility in connection with them, except to satisfy himself that they have been made up from the time cards by one person, the rate entered and extensions checked by another, the envelopes filled by both of them, unless still a third party is available, and the actual paying off witnessed by still another. For the auditor to attempt to check back the roll to the original time cards from which it is made up, or to verify it by any other documents would take more time and incur a greater expense than his client would be willing to pay for. If he has any reason to be suspicious it would be well for him to verify a sample roll in some

such way, and if he found anything to justify his suspicions he could report it to his client, who could then order further investigation, knowing that it would be expensive.

CHAPTER XIV

CLOSING THE BOOKS

118. *The old "balance account."*—A great many persons use the expression "closing the books" without knowing that it is a survival from a time when the books were actually closed at the end of a fiscal period; and that, therefore, it represented a more complete transaction than at present, when only a few accounts are actually closed. Originally, not only were the nominal accounts closed into profit and loss, or surplus, but in addition every asset account was credited by journal entry and its amount charged to "balance account," the reverse action being taken with the liabilities. As a result every account on the books was closed, including, of course, the "balance account." The books were reopened at the beginning of the next year by another set of journal entries, the reverse of the closing entries. The closing entry, "by or to balance," therefore, meant the transfer to this balance account, and the reopening entry "to or by balance" meant the transfer back again from "balance account." In transferring accounts from an old to a new ledger it was always the custom to close the old and reopen the new ledger through the "balance account," and this is still done by some. Modern accounting is impatient with unnecessary work and has almost entirely done away with the balance account, though the auditor cannot object to it if the bookkeeper wishes to use it.

119. *Net profits distinguished from net operating*

profits.—We have seen that the nominal accounts are closed into the revenue account in the three classifications of manufacturing, trading or selling and administration or profit and loss, and that views differ as to what items should go into the first two tables. The third, or profit and loss table, represents the capital and contains all items pertaining to the current year, not directly chargeable or creditable to the manufacturing or trading processes. Such are interest, bad debts, sometimes the salaries of executive officers, and cash discount, when this is not considered a reduction of price.

The balance of this table is called the "net profits," but it is important that it should be distinguished from the net operating profits, which was the amount brought down to this table from the trading table. The difference is that the only statement of profits that is valuable for comparison, year by year, is one that covers only those items that are common to all the years and that are necessary to the business. The classification cannot be rigidly laid down, in the same inflexible form, for all lines of business, because conditions vary, but when a classification is adopted for any one business it should be adhered to, or else all comparisons of percentages will be rendered useless.

120. *Use of percentages.*—For clearness of comprehension percentages are calculated, such as labor to material used, other manufacturing cost to material, sometimes giving the percentages on the detail of the cost. The percentage of selling expense is taken on the basis of the sales, as is also the loss from bad debts. Whether the business is a manufacturing or a trading one the percentages are valuable for the purposes of comparison, and the man who does not use them can

have but a very vague idea of the reasons for the variations in his profits from one year to another. They are valuable also for the purpose of comparing one department of a business with another, to ascertain the comparative value of the departments. They can be used to arrive at a proper idea of the value of the managers of departments by comparing the results of their work with those of their predecessors.

121. *Changes in business shown by colored lines.*—Instead of percentages recourse is sometimes had to the plan of showing the rise and fall of the total amount of business and of the increase or decrease of expenditure and profit, that is found by the use of different colored lines on a scale ruled horizontally for volume and perpendicularly for dates. When the comparison extends over several years this is the most satisfactory way of showing the results of the business, as the rise and fall of the lines is much more easily traced and understood than would be a mass of figures. These lines will show in a very forcible way the tendency of certain expenditures to keep parallel with the output, and of certain others to rise or fall in only a small degree, whatever the general course of the business may be. Labor will be one of the lines parallel with that of total business and if it falls below the parallel it will indicate that it is not paid as much in proportion to the general business as it has been previously receiving, while a contrary trend of the line will show that it is receiving an abnormally large share in comparison. In cases where the employer is satisfied that his labor is asking for unreasonable terms, an exhibit of such lines might serve as a better argument than any verbal one that could be used.

122. *Important to find causes of loss and gain.*—The

principal object of these different tables and of their correct treatment is to form a proper basis for these percentages or comparisons. It is no longer satisfactory to the manager of a business to know that he has made or lost a certain amount. He wants to know how it occurred and wishes to see whether the expenditures increase or diminish in proportion to the volume of business, with a view to finding out if possible the reason for any marked divergence from the normal. The accountant cannot usually point out the remedy for any special lessening of the normal profit, but he can show where the loss occurred, leaving to the practical managers to discover the reason and apply the remedy if possible. The cost accountant, however, often does undertake not only to locate the error but also to suggest an adequate remedy.

123. *Separate statements for departments.*—In a business that is susceptible of division into departments the revenue statement should always be made up for each department separately. In doing this there will often be some difficult questions that will have to be answered. In the case of a company running a street railroad and an electric lighting plant, there are certain expenses that manifestly belong exclusively to one or the other department and the auditor must see to it that a careful analysis is made of all the material and labor so that each is charged to the proper maintenance or operating account. But there are certain expenses that are common to both departments, notably all the power-house expense, including fuel. It is sometimes the practice to divide the operation of such a company into railway, lighting, power-house and general, but this is not at all thorough and gives little information as to the relative profitableness of the railroad and lighting

business. The auditor must know how to allocate the power-house expense between the railway and the lighting departments; and if he does not know how to do it himself he will have to consult an electrical engineer, who will tell him that the entire expense of the power-house is incurred for the sake of producing the electricity that goes over the wires to either the cars or the burners, and that the total expense must be divided between the two departments in proportion to the amount of current used by each. The auditor must therefore inspect the records of the works, or the reports sent in from there, to ascertain the number of kilowatts sent out to each department for the period, and divide the total power-house expense in accordance with these figures. The fact that he will have to learn what a kilowatt is will add interest to his work, but he must be sure that he does know, for he will find sometimes that even a high officer of a company, to whom the railway is of more importance than the lighting department, will think that the 2,000 volt lighting current should be charged at a higher rate than the 500 volts sent out to the railroad.

124. *Distribution of general expense.*—It is not so easy to distribute the general expense, which consists of office rent, salaries and expense, taxes, salaries of officers and insurance and they are usually left in a class by themselves. They are generally comparatively small by the side of the direct operating expenses.

In a department store it is sometimes attempted to divide the general expenses between the different departments, but no scheme has yet been devised that will work satisfactorily. The best way is to value the space occupied by each department according to location and square feet covered and charge a sufficient sum to each

department to make in the aggregate enough to pay for all the general expenses, such as rent or its equivalent if the building is owned, lighting, heating, elevator service, janitors, watchmen and anything else not directly chargeable to a specific department. In other words the whole business treats each department as a tenant and charges it with the rent of the space it occupies; the only difference between their relations and those of an ordinary landlord and tenant being that the rent is supposed to be based on the cost without any profit being included. In arriving at the proper sum to charge each department due allowance must be made for advantages or disadvantages of location with reference to accessibility and light, exactly as if the relation of landlord and tenant was a real and not an imaginary one.

If a proper system of keeping track of the stock on hand is in force, insurance can be divided among the departments on the basis of the values carried on the average, otherwise it would have to go into the class of general expense. It is always better to divide everything that can be divided on an equitable basis, and to make the items of general expense as small as possible, and not to use that account, as is often done, as a convenient receptacle for every expenditure that does not positively force itself into a classified account.

125. *Surplus.*—The net profit of the year is brought down into the surplus or "disposition of profit" table, to which are charged any dividends paid, and any item of expense or loss that is accidental or sporadic and does not belong exclusively to the current year; profits of a similar nature being credited to it.

Surplus is one accounting term about which there should be no ambiguity, as it can mean only one thing,

that is, the excess of the assets over the liabilities, including in the latter term the capital stock. It does not make any difference how this excess is brought about. It may be by the gradual growth of the operating profits, when the dividends, if any are paid, are less than the profits made. It may be by an accidental or unforeseen increase in value, which might be very large, as in the case of mining stock which was taken over at ten cents a share from a customer whose account was considered worthless and which eventually sold at $5 per share. It may be from the donation of land to a factory, which land becomes the property of the company when certain conditions have been fulfilled. Whatever the source, it is a legitimate surplus if it represents realized value. Therefore, there is no occasion for setting up on the books any such account as "special surplus." For the information of stockholders, it is allowable, as we have seen, to show the total surplus on the balance sheet in two or more subdivisions, as "appropriated surplus and free surplus," as an indication that part of the surplus heretofore accumulated has been invested in or appropriated to the purchase of some fixed asset, whether that investment be in sinking fund bonds, new plant or any other thing which is not readily realizable in cash. But the different divisions of the surplus should be added together so as to show the total surplus, as in no other way can be shown the true condition of the accumulated undivided profits to date. It is not necessary to open accounts on the books with these divisions of the surplus account, especially when the investments are plainly shown on the asset side.

It must not be forgotten that there is a distinct difference between the functions of the profit and loss ac-

count and the surplus. Into profit and loss are closed all the operations of the year, pertaining to the regular and ordinary business of the year. If extraordinary and accidental items are put into this account, the basis of comparisons with other years is thrown out of proportion, and for this reason all such items must go directly into surplus.

126. *What is a profit?*—As a rule, there can be no profit except on a completed transaction, but sometimes an apparent profit from a bookkeeping standpoint may not be a real one from the standpoint of the auditor. An instance of this was seen in a statement made by a street railway to prospective purchasers of the entire stock, showing net earnings of 8 per cent per annum for nearly two years. The statement was made by the secretary as a correct copy of the books. The intending purchasers sent a professional auditor to verify the statement, which was found to be absolutely correct as far as the books were concerned. But there was an item of $50,000 credited to profits, which arose from the purchase for $50,000 of stock for the face value of $100,000 from a man who had received it at the time of the merger of three companies into the present one. The face of the stock was charged to capital stock account and the question was what to do with the $50,000 difference between that and the cash paid. This question the secretary answered by crediting it to profit and loss, and what was worse, he included it in the gross earnings in his statement. He was perfectly honest about it and was very angry when the auditor threw it out as not being a profit at all, but a lessening of the water in the stock, as the road had been, as usual, purchased entirely with the bonds, the stock being represented by a purely fictitious debit to plant and franchise

account. The credit should, of course, have been to the latter account. Even granting that the good-will of the franchise was worth the whole of the capital stock, and that in consequence the item could be considered a legitimate profit, it was in no sense an operating profit; it had no place in a statement of earnings which was to be submitted to prospective buyers as a proof of the earning power of the stock. There were other errors in the statement arising from the omission of accrued bond interest and other liabilities not yet due and, therefore, not on the books, the total errors bringing the true earnings down below 3 per cent per annum.

127. *The test of a profit.*—One crucial test of a profit is that it adds actual value to the business, value that can be realized. As many of the items which enter into the calculation, such as the amounts necessary for the establishment of proper reserves, are not matters of absolute fact, but are based on the best judgment of those that know most about them, it follows that any statement of profits is at best only an estimate. All that can be said, therefore, in regard to the profits shown by a revenue account is that they are correct, if the estimates of depreciation, of reserve for bad debts and other things affecting the value of the assets are also correct. No profit can be more definitely stated until the business is actually wound up and all the assets realized in cash. In preparing a revenue account and the resulting balance sheet the auditor is expressing an opinion and is not registering facts.

But in expressing this opinion, the auditor must be sure that he has properly investigated all the steps leading to it, that he has properly distinguished between the expenditures that are purely for the maintenance

of a plant and those which are actual additions to its value, and has not allowed credits for profits that are not really made, however plausible may be the reasoning in regard to them.

An instance of this latter error is found in the claim that is sometimes made that because the interest paid on borrowed money employed in development work is properly chargeable to development cost, therefore interest could be paid to stockholders and charged in the same way. This is manifestly a pure subterfuge by means of which to pay out a profit that was not really earned. It is questionable whether a board of directors who authorized it could not be made personally responsible to subsequent stockholders for the amounts thus paid out.

128. *Capital expenditures and revenue expenditures.*—The auditor should have a clear idea of the difference between capital expenditures and revenue expenditures. Those things that can be reasonably added to the original investment of capital as capital expenditures instead of being charged against profits are:

Actual additions to property in the shape of new buildings, new machinery and new tools, not replacing old ones of the same character.

Replacement of old assets by new ones of higher cost, the difference in cost being chargeable as a capital expenditure.

Such alterations to fixed assets as result in greater efficiency in the way of increased output, may be charged, in part, as an investment of capital, as may also such alterations as result in a diminished operating cost. But in both these cases it is better to recognize the real nature of the expenditure as a means of adding to the profits

of future years and carry them as deferred charges in some such account as "betterments" to be gradually written off out of the profits they will cause.

Even when the expenditures are so extensive that they amount to the rebuilding of a plant in order to modernize it, they should not be added to the value of the fixed assets already on the books, as permanent capital assets.

It must be understood that when ample reserves have been maintained for the depreciation of the old fixed assets, so that these old assets are virtually not on the books at all, the replacing assets can be charged as investments, while the old assets are charged off against the reserve accounts established to provide for that very purpose. All the auditor is concerned about is to be sure that the amount at which the fixed asset is carried is not greater than its real value to the business as a growing concern.

Ordinary repairs and replacements are, of course, chargeable, as revenue expenditures, to profit and loss.

If a sale is made of an asset against which a depreciation reserve has been set up, the proper entries to be made would be to credit the original cost to the asset account, to charge the reserve with the amount with which it has been credited for that particular asset and to adjust the difference between this net carrying value and the price realized, by a charge or credit to surplus. That is, if a machine costing $1,000 originally has been depreciated 10 per cent per annum for two years, its carrying value would be $810. If it is now sold for $700, machinery account should be credited $1,000, depreciation reserve charged $190 and surplus charged $110. The charge is to surplus because the loss belongs to the whole period and not to the current year.

CHAPTER XV

DIVIDENDS

129. *Dividends payable from surplus.*—When the profits of the year have been ascertained and carried to the surplus account, the question arises whether that account will permit the paying of a dividend. It is, of course, understood that no dividend can be declared in an incorporated company, and no money drawn out in an ordinary partnership unless there are legitimate profits actually made to a sufficient extent to cover the proposed dividend. If the profits are not sufficient the company will be paying the dividend out of capital, which practice is absolutely wrong, or the partners will be withdrawing part of their capital, which they have a right to do provided they make the entries so as to show the payment as a withdrawal of capital and not as a dividend from earnings.

130. *Close scrutiny of the balance sheet necessary.*—In determining the right to declare a dividend it is necessary to examine the balance sheet to see whether there are any items in it that should be written off from the assets, or any omitted from it that should be added as liabilities for reserves against bad debts or wasting assets. It has been held, however, that it is not necessary to make good all the assets, in order to declare a dividend. For instance, if the development expense is still carried on the books as an asset it is not imperative that it shall be written off before a dividend is paid, provided

a reasonable portion of it is cancelled and the course of the business justifies the carrying of the remainder as an asset in the nature of good-will. If proper reserves have been established or the corresponding amount of depreciation has been charged and there is a sufficient balance in the undivided profit account, the advisability of declaring a dividend is left entirely to the board of directors. But if they declare a dividend which acts as an impairment of the capital they may be held individually liable for having done so, therefore, the auditor should satisfy himself that the dividend is a proper one, and if he is convinced that it is not, he should call the attention of the directors to the risk they run in declaring, and paying it.

131. *The right to declare a dividend not dependent on cash balance.*—The auditor will frequently find that the officers of a company are under the impression that they cannot declare a dividend unless the company has at the time an available cash balance with which to pay it. In a large company where the stock is scattered and the money will be at once demanded this is undoubtedly true, but in a smaller concern there are frequently one or more of the principal stockholders who will be willing to have the dividend credited to their accounts to be drawn as they need it when the company is in funds, or it may be that they already have debit balances which the dividend will not much more than cover. Sometimes the dividend is paid in scrip which bears interest and is negotiable, so that those who need the money can sell the scrip and realize whatever it may be worth on the market. The company will take up the scrip whenever it is in funds and is sometimes able to buy it up at a discount. Or it may be exchanged for bonds or for shares of stock, in case it is desirable to increase the cap-

ital. Sometimes the dividend is originally in the form of new capital stock shares. This action fixes the active capital in the business in a more permanent form, taking it out of the power of the board of directors to dissipate the surplus by paying it out in cash dividends.

182. *The obligation to declare dividends.*—A board of directors is not obliged to declare a dividend, although there may be profits enough to declare it out of any funds on hand sufficient to pay it, unless it can be shown that the directors refrain from such action for some other purpose than the strengthening of the position of the company. The board might pass dividends for the purpose of depressing the stock and of tiring out stockholders who needed the income and could be induced to sell at a low price in order to invest in something that would give them present returns. If such a case or a similar one can be made out, a court could compel the directors to declare a reasonable dividend.

183. *Rights of subscribers who have not paid in full.*—Subscribers for stock who have not paid for it in full are not usually entitled to participate in dividends, except where all the stockholders are on the same basis as to partial payments, in which case the dividends should be credited to the stock accounts of the subscribers and not paid in cash. If this should result in too great an accumulation of money in the treasury of the company the best way to reduce the cash balance would be to buy in some of the stock and cancel it or place it in the hands of a trustee. There is, however, no obligation to credit the dividends to the unpaid stock accounts if the stockholders are willing to carry the liability on the unpaid subscriptions, and the company has sufficient funds on hand to pay it.

A dividend is usually declared at so much per cent on

the capital, but it is sometimes said to be for a specified sum per share.

134. *Rights of preferred and common stockholders.*—Dividends on preferred stock take precedence of those on common stock. Preferred stock is a special stock on which a specific dividend is guaranteed. It is sometimes cumulative, which means that if the guaranteed dividend is not made in one year the guarantee continues over into subsequent years until the entire preference dividend has been paid for all the years. It must be understood that the guarantee is limited by the ability of the company to pay the dividend out of actual earnings and in that respect differs from the interest on bonded indebtedness, which is a preferred debt whether it is earned or not. Preferred stock cannot demand a dividend unless it can be shown that it is actually earned. If the dividend is non-cumulative each year stands on its own basis, so that if the business is sufficiently prosperous in any one year to pay the preference dividend for that year and leave a surplus, that surplus can be paid to the common stockholders as a dividend, regardless of the fact that for one or more years in the past the preferred stock has received no dividend. While the preferred stock is entitled to the first dividend up to the fixed rate, it is not entitled to any more, however much there may be to divide, unless there is a specific agreement, as there sometimes is, that whenever the profits are sufficient to pay more than the fixed rate to both classes of stock, they shall both share equally. Usually after the given rate has been paid the balance of the profits belong to the common stock, so that in a very prosperous company the common stock may receive very much larger dividends than the preferred and be by that much the more valuable.

135. *Present method of paying dividends.*—In paying dividends it used to be the custom to list the stockholders in a special dividend book showing the number of shares held by each and the dividend to which each was entitled, with a place for his signature receipting for the dividend. In this case "dividend" was credited and "surplus" charged at the time the dividend was declared. As the stockholders came in and drew their money, dividend was charged, the balance of the account being a credit to "unpaid dividends." As companies grew larger and as their stockholders became so scattered that it was impossible for them all to call at the office of the company and sign receipts, this method was almost entirely given up, and the usual custom now is to make out checks for all the stockholders at once and mail them on the day the dividend is payable. The checks are usually on a special form so that the endorsement acts as a receipt for the specific dividend. In this case the total amount of the checks to stockholders in payment of dividends is charged to "dividend account," which is eventually charged to surplus and there is never any credit to unpaid dividends.

As capital stock is transferable only on the books of the company, the dividend is payable to the person whose name appears on the books as the owner, who is called the "holder of record." In order to prevent confusion in case of transfers occurring after the checks are made out, it is the custom to close the transfer books a few days before the dividend is payable, and to reopen them the day after the payment. In this way the holders of record cannot change for a limited time, allowing time enough to make out the checks. If any stock is sold during the closed time it is said to be ex-dividend, as the seller, being the holder of record, will receive the check

for the dividend, although at the time he gets it he will not be the actual owner of the stock.

136. *Dividends depend on assets.*—The word dividend means the thing to be divided, and in this sense is applied to the partial payments made to creditors in liquidating a bankrupt concern and to stockholders and partners in winding up a business. It has nothing to do with profits, but is concerned only with the assets, which may not necessarily be all cash, if one or more of the parties is willing to take property of any kind, at an agreed valuation. It may happen in a partnership liquidation that there are more assets than are sufficient to pay all the liabilities and the partners' capital. The excess must be profits, which would then be divided between the partners on the agreed profit-sharing basis and not on the basis of capital, if there were any difference between the two rates.

137. *Proper procedure in a partnership.*—An auditor should thoroughly understand the principles governing the making of liquidating dividends to partners who share profits and losses in a ratio different from that of their capitals. The rule ordinarily given for the settlement of partnership affairs is to pay outside creditors first, then any loans made by one or more partners to the business, then to repay the partners' capital proportionately and if there is anything left to divide it among the partners on the profit-sharing basis. But this rule cannot be rigidly adhered to in all cases. The proper procedure, after paying off the outside creditors, is to ascertain the condition of the capital accounts by determining the loss if any, and charging it against the capital accounts, and then to make the division on the basis of the amended capitals. It is a dictum of ordinary common sense that if the capital of one of the partners

now appears as overdrawn the deficit must be made good out of his loan to the company if he has one, in spite of the rule that loans by partners shall be paid before any further division.

138. *Payment of liquidating dividends—illustration.* —If the entire loss is known when the division is begun there is no danger in paying liquidating dividends as fast as assets are realized. But if the assets are such that there may be further considerable losses the liquidator runs a risk of overpaying one of the partners whose percentage of profit, and, therefore, of loss, is greater than the others in proportion to his capital. The only way to make this clear is by an illustration. Suppose A, B and C have $9,000 each to the credit of their capital accounts, but that they divide profits on the basis of 50, 30 and 20 per cent respectively. They make a loss of $9,000 and agree to liquidate. Collections to the extent of $9,000 are made and divided between them. The situation would then be as follows, if the money collected is divided on the basis of the capital standing to the credit of each:

	Total	A.	B.	C.
Capital	$27,000	$9,000	$9,000	$9,000
Loss	9,000	4,500	2,700	1,800
New Capital.........	18,000	4,500	6,300	7,200
Dividend	9,000	2,250	3,150	3,600
New Capital	9,000	2,250	3,150	3,600

If the remaining $9,000 were paid, the division would give each man the amount standing at his credit and there would be no trouble. But if there is a further loss, say of $6,000, it would have to be divided on the basis of 50, 30 and 20 per cent and $3,000 of it would be chargeable to A, who is, therefore, overpaid $750.

If the final outcome of the liquidation, therefore, is un-

certain, the only safe plan for the liquidator to adopt, other than refusal to make any distribution until the fate of all the assets is definitely known, is to apply the first payments in such a way as will bring the respective capitals to the same proportion as the loss-sharing ratio. In the example stated, B would be given $3,600 and C $5,400 of the $9,000 dividend. The capitals would then stand A, $4,500, or 50 per cent; B, $2,700, or 30 per cent; and C, $1,800, or 20 per cent of the remaining $9,000. Whether any part, or all of the residue should prove either good or bad, the division of either loss or dividend would be at the same ratio and there would be no danger of overpayment to anyone.

It has been claimed by some that since the firm is in liquidation, the provision as to profit-sharing ratio is abrogated and does not apply to the losses, but there does not seem to be any authority for this view. Although these are called losses of liquidation, they are not really such, since the items on which the losses occur were acquired while the business was a going one, and any quality in them which would lead to loss must have been inherent from the beginning. While the loss was developed by the liquidation, or discovered in the process of it, it was really always there, although latent or temporarily obscured.

139. *Principal and income.*—In connection with the topic of profits a very interesting phase of the subject is found in the determination of what constitutes income and what is an addition to principal. More often than anywhere else, this occurs in cases in the probate court, where it is necessary to construe the terms of a will by which the income of an estate has been left to one person during his life, and the principal of the estate (called the corpus) to another person called the remainderman.

It will be seen at once that there are here two conflicting interests, and that if money is paid to the holder of the life interest, as income, which is in reality an addition to the value of the estate, or which diminishes the amount to be given to the remainderman, when the life interest terminates, the remainderman will have a claim against the trustees of the estate. On the other hand the holder of the life interest will naturally claim everything as income that can possibly be construed to be such.

The auditor is frequently asked to determine this question, but unless the matter is very plain, he will seldom be able to do more than give his opinion and the reasons for it. The only safe plan for the trustee to follow is to refer the matter to the court and get positive instructions. In some cases there is little or no doubt of the true position.

140. *Profits from stock or bond sales.*—Profits on sales of bonds or stock originally held by the estate, at prices above those at which they were inventoried are additions to principal, and not income. Conversely, losses on such sales are chargeable to principal. If, however, the bonds or stock were investments made by the trustee himself, it is a question whether profits on them should be added to the principal or treated as an income from trading by the trustee. The bulk of expert opinion is rather in favor of adding them to the principal, as they result from a change of assets and are not a regular income from them.

141. *Case of a wasting estate.*—In the case of wasting principal, as in a mine, the trustee who is directed to pay the income to a life-tenant would not be justified in considering all the dividends received as income. He must provide for the wasting of the corpus or principal, so that he can turn over to the remainderman an equiv-

alent for the reduction in value of the stock in the mine consequent on the exhaustion of the ore. The testator may have been in the habit during his life of calling all receipts from this source income, but unless the will is very explicit in directing that all receipts are to be paid to the life-tenant, the trustee would be bound to protect the interests of the remainderman, and an auditor should advise him to retain and reinvest a certain portion of the so-called income as an offset to the waste of the principal. It may be that the company declaring the dividend may have made such provision itself by means of a sinking fund or otherwise, in which case the trustee would be justified in regarding all the money received from dividends as income.

Bond premiums are in the nature of a wasting asset, whether they are on bonds received at market value in the original inventory or purchased above par by the trustee himself. Different courts have decided differently on this point, but it would seem as if the only just method was to calculate the interest at the basic rate on the total cost of the bonds and to retain and reinvest the difference for the benefit of the remainderman.

142. *Taxes and improvements.*—Taxes assessed against the estate before the death of the testator, though not payable until afterwards, are a charge against the principal, as are, also, all debts due by the testator himself, including funeral expenses, and all legal and other expenses arising from a contest of the will, or incurred in defending the estate against claims dating from before the death of the testator.

Alterations and additions to property increasing its value are a charge against the property and, therefore, the principal of the estate, but, of course, ordinary repairs and maintenance must be paid out of the income.

Expense on unimproved land, including the taxes, would always be a charge against principal, on the ground that there is no income from such property out of which to pay them, and also that such expense is incurred with the expectation that the value of the land will correspondingly increase to the eventual benefit of the principal.

143. *Contracts of a testator.*—Contracts: A leading authority says that "the trustees must carry out any contracts entered into by a testator prior to his death, and any profits resulting therefrom will belong to the principal and not to income." It would seem more equitable, however, to allow the life-tenant such a portion of the profit as the proportion of the work done subsequent to the death of the testator in regard to the whole profit would indicate as the profit of the period during which the life-tenant had an interest in the income of the estate. Otherwise, the trustee would be using money to complete the contract, for the sole benefit of the remainderman, which should have been made to produce income for the life-tenant.

The expense of managing and carrying on a trust constituted by a will is chargeable against the income, including the trustee's fees and legal and other expenses necessary to the proper management.

144. *Income accruing from day to day.*—Those classes of income which accrue from day to day are to be credited to the principal of the estate up to the date of the death of the testator, that is to say, all that is then accrued. These are rents, interest on notes receivable and on bonds. In this matter the auditor must be careful not to follow British authorities, for courts in Great Britain have ruled that each coupon on the bond constitutes a separate contract to pay a definite sum at a cer-

tain time and that it belongs to the period in which it is due. A similar decision was given by Massachusetts courts. On the other hand, it is the law in England that when a dividend on stock is paid to an executor covering a period part of which is prior to the death of the testator, he must apportion it between principal and income on the basis of the lapsed time. It is important to note that this division is not made until after the dividend is paid, while accrued rents and interest are inventoried at once. In this country it is generally considered that ordinary dividends on stock do not accrue from day to day and have no existence until they are declared, and it is customary to regard the whole dividend as belonging to the period in which it is declared. This arises from the uncertainty as to when the profits are made, since there are very few concerns whose business is so steady and uniform that they may be considered to be making one-fifty-second or one-twelfth of their yearly profits each week or month. This idea has been made to include cumulative preferred dividends, although the reasoning is not as good in regard to them, and it is doubtful whether the courts would uphold it if it were brought before them.

145. *Ordinary dividends treated as income.*—It is a very difficult thing to hold the scales theoretically in balance in dividing dividends between principal and income. If the company declaring the dividend has made only 6 per cent in the period covered and yet declares and pays a dividend of 10 per cent, it is manifest that 4 per cent has been taken from the old surplus, and to that extent the value of the stock has been depleted. While it is true that the undivided surplus of a corporation is not the property of the stockholders and that they have no claim on it until a dividend is declared out

of it, it is equally true that its existence enhances the value of the stock, and that the remainderman has a right to claim that the asset to which he has an eventual title shall not be diminished below the value that it had when it came into the hands of the trustee. On the other hand, he has no right to have it increased, as would be the case if the supposed conditions were reversed and the dividend were only 6 per cent, although the earnings were 10 per cent. As this question is too complicated for the ordinary person to understand, the universal custom is to treat ordinary dividends as income.

146. *Extraordinary cash dividends.*—In the case of extraordinary cash dividends or of stock dividends, the amounts involved are often too large to allow the true principle to be ignored. In one instance an estate held stock whose face value was $15,000, the book value being very much greater. In anticipation of a reorganization and combination with other companies a cash dividend of $60,000 was paid and in the transfer to the merger company a further cash payment of $37,500 was received and the $15,000 stock was taken up with $37,500 of the stock of the merger company. The trustee had received $97,500 in cash and $22,500 in stock, which was manifestly not to be considered as income, as would be the case if the rule was rigidly enforced that dividends belong to the period in which they are declared. Cases similar to this have been decided differently by different courts. A decision by the United States Supreme Court says:

Reserved and accumulated earnings, so long as they are held and invested by the corporation, being part of its corporate property, it follows that the interest therein, represented by each share, is capital and not income of that share, as between the

life-tenant and the remainderman. A stock dividend really takes nothing from the corporation and adds nothing to the interests of the shareholders. After such dividend, as before, the corporation has the title in all its corporate property, the aggregate interests therein of all the shareholders are represented by the whole number of shares, and the proportionate interest of each shareholder remains the same.

However, a New York decision, rendered after the above, says:

> When a stock dividend declared by a corporation and allotted to shares of its original capital stock, belonging to a testamentary trust estate, constitutes as a matter of fact a distribution of accumulated earnings or profits, it represents income and belongs to the life-tenant of the trust estate as between him and the remainderman.

This difference of opinion was shown in a marked degree in two cases regarding the same dividend. One estate holding some of the stock was in Massachusetts, where the dividend was decided to be income, and the other was in Connecticut, where the same dividend was held to be capital.

The principle adopted in the leading case in Pennsylvania would probably appear to the accountant to be the only equitable one. It is that the value of the stock when it came into the hands of the trustee should be established, and that this value should be maintained. Therefore, any stock dividends or extraordinary cash dividends would be given to the life-tenant as income, only after enough had been reserved for the benefit of the remainderman to restore the capital of the latter to its original status. In this way the rights of both parties would be conserved. To give all the extraordinary dividends to the principal would scarcely be just if sev-

eral years had elapsed since the stock came into the hands of the trustee, if during those years the ordinary dividends had been less than the real earnings of the company.

Under these circumstances it must be apparent to the auditor that his only safe course is to advise his client to apply to the court for instructions.

There are occasions, however, on which his advice may be given after he has formed his own opinion. Where the stock is carried as an asset by a company which is the auditor's client, the board of directors may wish to consider all the dividend as earnings and themselves to declare an excessive dividend on the strength of it. The auditor should certainly object to this action, if the book-value of the stock has been reduced below the amount at which it is carried on the books. Enough of the dividend should be credited to the account of the stock to reduce the carrying value to its real value. This would apply also to an ordinary dividend which is greater than the actual earnings for the period which it covers. Conversely, if the dividend is less than the actual earnings, there would be established a secret reserve, unless the carrying value were brought up to the new book-value. There is, however, so strong an objection to writing up an asset, and crediting surplus with an unrealized profit that it would be advisable to credit the increased valuation to "contingent stock profit," or not to write up the asset at all, but to show the book-value in parenthesis on the balance sheet.

147. *Confusion as to the meaning of "income."*—The confusion in these cases arises very largely from a similar confusion in the mind of the ordinary business man between income and expense, and receipts and disbursements. It is very difficult sometimes to explain to such

a man that he may have income that is not a receipt, or an expense that is not represented by a disbursement. The ordinary man wants to know how much money he has received and how much expended. He has been used to dealing with cash and has grown to think that the money involved is the all-important thing. Hence all the money he receives above the face of his asset is income to him, and nothing else is.

Income is necessarily only what constitutes a clear gain in value, whether received in cash, at present, or to be received in the future, provided its eventual receipt is, humanly speaking, certain, and that in the meantime it is in such shape that it can be carried as an asset. In that way the profit on goods sold is an income, although for the time being it is included in the accounts due from customers. If the ordinary testator had a clear idea of these matters he would be more apt to word his will so that there would be no doubt in the mind of the executor or trustee as to his real intentions. In the last analysis it is always the intent of the testator that must govern the decision, even of the court.

If attorneys who draw up wills would thoroughly acquaint themselves with the accounting principles involved, or would consult competent accountants in regard to them, they would be able to give testators advice which would prevent many disagreeable misconceptions. In the discussions preceding the passage of the Federal Corporation Tax law, it was made very evident that even when an attorney was eminent enough to be Attorney General of the United States he did not necessarily have a very clear idea of what constitutes income.

CHAPTER XVI

CONDUCTING AN AUDIT

148. *Attitude of the auditor toward employer.*—In taking up the proper way in which to conduct an audit, one of the first points to be considered is the attitude of the auditor toward the office whose accounts he is examining. It is a little difficult to describe the exact position he should take. He must avoid placing himself on the footing of a clerk with the head of the office, but must preserve his complete independence, while at the same time he must be careful not to arouse antagonism by too great an assertiveness. He must be willing to give way in all minor things, where no principle is involved, in order to make more effective his positive stand for his own opinion when an important point is under consideration, and he feels that it is essential to honest work that his advice should be followed.

Many office managers have little pet ideas of their own as to how certain things should be handled. The ideas may not be the best in the world, but the manager thinks they are, and if you contest them, he gets a notion that you are trying to upset the whole routine of the office, and a feeling of antagonism is aroused that makes it difficult to carry out any reform whatever. It is not often that the auditor is given a free hand to make any changes that he may see fit. He is more often obliged to use tact in bringing about the improvements that he desires to introduce.

When he has been the regular auditor of the house

for any considerable time, he should have gained the confidence of his clients sufficiently to be able to demand and to receive absolute authority to make any changes that he considers necessary, but he is seldom in that position at the beginning of his experience with any individual concern. When he has established himself on the right footing he will become the confidential adviser of the manager and will be consulted on many important points that are vital to the success of the business. For this reason it is poor policy for a house to be always changing its auditors, since no one of them can become thoroughly conversant with the business and its history.

As an aid to the better acquaintance between the auditor and the business manager the frequent audit is preferable to the annual one. When a whole year intervenes between two visits of the auditor, the conditions of the business cannot be as fresh in his mind as when the interval is only a quarter of that time. The frequent visits of the auditor allow more opportunities for the discussion of points that arise, and offer a greater chance for the cultivation of the friendly feeling that should characterize the relations between the two men.

No manager likes to have any more outsiders cognizant of the details of his business than are absolutely necessary. It is advisable, therefore, to send the same assistants each time when possible, and there is no objection to this if the chief auditor keeps sufficient watch over the progress of the work to see that his men are not falling into ruts or overlooking anything that is of importance.

149. *Relations with the clerical force.*—In his relations with the clerical force the auditor should be firm but not harsh. While he is, of course, absolutely independent of any of the employees, it is never advisable to

incur their ill-will by a dictatorial manner or by a parade of authority. He should make it very plain to every one in the office that he is willing to help by advice in every way possible, when asked to do so, and should impress upon them the idea that his object in any changes he may suggest is either to lessen the work or to improve its quality. While treating the members of the office force with due courtesy, he should never become chummy with them or allow them to pass beyond the strictly business relations which should characterize the intercourse. If he is employing assistants on the work he should warn them against cultivating more than an ordinary friendly feeling between themselves and the employees. In arranging the details of the audit he should try as far as possible to use the various books at the time most convenient to the men who keep them, so as to interfere as little as possible with the routine work of the office. By the exercise of a little judgment it is easy to work on the book that may happen to be idle at the time. When the office sees that he is willing to do this they will be glad to accommodate him when it becomes necessary to interrupt the current work to a certain extent. But while thus willing to accommodate himself to the routine work as far as possible, he must have it distinctly understood that he, alone controls the situation, and that he can take possession of any book at any time that he thinks necessary.

In a new audit he will probably be offered a great many suggestions about the best way to handle that particular set of books. He should thank the friendly adviser and then quietly go to work in his own way. It will not take him long to unravel the intricacies of even the most complicated system, though he will occasionally find some whose vagaries will need careful study.

He may encounter bookkeepers who will object to the point of absolute refusal to make changes that he requires. His only recourse then is to handle the matter without gloves and fall back on the authority of the head of the office and demand that the desired move be made at once and without reserve.

150. *Method of conducting the first audit.*—In the first audit for a new client the auditor should thoroughly study the system in use in the office, so as to acquaint himself with the books that it will be necessary for him to examine. If there are many of them he should make a list of them. It sometimes happens that the bookkeeper forgets to give him one or more books that are not often used, or it may be that the bookkeeper is absent for one reason or another, and that there is no one thoroughly posted in regard to all the books. The absence of one or more books will be discovered from the fact that there are postings to the ledger account that are not traceable to the books in hand and must, therefore, have come from books not yet in evidence. The auditor should study the methods in force of obtaining and recording the information in regard to the daily transactions of the business, the manner in which it is treated after being obtained, the safeguards that are provided against innocent or intentional error, the system adopted for keeping account of stock, and the general features of a cost system, if one is carried on, and the way in which all the underlying work fits into the general scheme of the accounts. He should also familiarize himself in a general way with the character of the business, the nature of the articles manufactured or dealt in, and with any peculiarities in the customs prevalent in that particular line, such as the usual trade and cash discounts, and the usual time allowed to customers in that trade.

With the whole course of the business thus thoroughly understood, a definite plan can be adopted, subject to any modifications that may be caused by the later discovery of details that it may be considered necessary to investigate. The principal having thus acquainted himself with the work to be done, can give verbal or written instructions to his assistants who do the actual work, and he can be in a position to supervise it intelligently, either in personal visits to the office where the work is being done, or by scrutinizing the papers brought to him from time to time, or at the close of the audit, and will be able to give advice if it is needed at any time. It may be that the senior accountant is a man who can be entrusted with the entire work, including the mapping out of the entire scheme. Such a man, however, would virtually rank as a principal.

In a periodical audit, after the first one, all this information would be in possession of the auditor, and it would be necessary only to refer to the previous audit and from it make up a schedule of the work to be done, not only for the guidance of the assistants, but to prevent the accidental omission of any part of the audit. As a further check on this, it is customary for each person on the work to make reports on either daily or weekly sheets, detailing the kind of work done and the number of hours consumed in it. In the auditor's office these reports are posted to contract sheets which will eventually show the total time consumed, from which the cost can be calculated and the account made up against the client, if the work is being done on a per-diem basis. In any event, the information in regard to the time is valuable in estimating on future work of the same general nature.

The schedule of work to be done on an audit would be made up by each auditor in accordance

with his own ideas. Naturally, the first instruction would be to verify the cash, unless the custom of the office was to deposit all receipts, in which case there would be no cash to verify, except the petty cash. Some auditors insist that all the additions in the cash-book must be proved, while others content themselves by making copious tests. The principles governing the audit of each item of the accounts have been discussed under their respective headings. No inflexible rules can be laid down as to the order in which these items shall be taken up in an audit, nor how much investigation shall be given to each. Only one thing must be insisted on; the auditor must treat each department of the work with sufficient thoroughness to satisfy himself that he has not omitted anything of importance, nor neglected to notice any unusual payment or receipt that should have been investigated. Above all, he should not unduly curtail an audit because he has made a flat bid that will not pay him if he does thorough work.

151. *Field notes.*—For the double purpose of giving the principal the desired information and of preserving data that will support the tables contained in the report, it is now the custom of many auditors to make abstracts of the accounts on their own paper instead of checking the books. This paper is provided with a number of debit and credit columns. Each set of columns is headed with the name of an account in the general ledger. In order to save time in looking for an account, as well as to condense the work on as few sheets as possible, it is well to block out the sheets in advance by running through the ledger, so as to get the accounts on the sheets in the same order as in the ledger, and to allot each account just about the space it will occupy. The

posting-folio reference will then be a guide as to the position of the accounts on the sheets, but postings to the sheets must be by names of the accounts and not by page numbers. Each item in the books of original entry is posted to its proper column on these sheets, except that accounts receivable, and payable are treated by totals only and not in detail. When columnar books are used only the totals of the columns are posted. When all the items are posted and the columns added, the starting trial balance is spread on a trial balance sheet in the first two columns, the debit and credit totals for each account taken from the analytical columns are placed in the second two columns, and the resultant trial balance in the third set of columns. This trial balance is then compared with the balances on the ledger and any discrepancies that may be found are investigated and adjusted. This makes a much safer audit than does the checking method, as even the most careful auditor is liable to follow the posting and repeat an erroneous one by inadvertence.

For instance, an item of $150, consisting of a dividend received by a certain company on an outside investment, was posted by the bookkeeper to insurance on page 28 instead of to interest on page 26. The auditor in checking the accounts, saw that the item was posted to page 28 and checked it to that page, without noticing the name of the account. It was unquestionably a careless thing to do, but even the best men sometimes grow careless when doing purely routine work like checking. The error was not discovered until some time after he had rendered his report, and when his attention was called to it he could do nothing but acknowledge his blunder and resolve that in future he would always adopt the analytical method, which would have detected

the error, since attention would be paid then only to the name of the account, and not to the number of the folio. The certainty of this process offsets the slight increase of labor and time necessary to carry it out, and it has the advantage of doing away with the necessity of making check marks on the books, a practice to which some bookkeepers strenuously object, and the further advantage of furnishing the auditor with a complete abstract of the books for his office files.

In the ordinary way of checking the accounts to the ledger and then taking a trial balance, or checking to the one prepared by the bookkeeper and copying it, the same schedules could be made up, but there is nothing in the possession of the auditor that would substantiate them.

In abstracting, the usual method is to begin with the cash-book. When all the items have been posted from that to the abstract sheets, including the total cash receipts and disbursements, a summary is made of the total debits and credits. If it balances it is not necessary to add the cash-book, except as to the columns whose totals only have been taken. Under the cash-book postings on the abstract sheets are now posted the entries from all the journals, and the totals are then transferred to the second set of columns on the trial balance sheet. These columns must, of course, balance, as must the resulting trial balance in the third set of columns. If the books are to be closed, the profit and loss items are put in the fourth set of columns by crediting the expense accounts and debiting the profit accounts, the balance of net profits being put in red ink. By adding and deducting from the last trial balance in the third set of columns, the balance sheet is found, and put in the fifth set of columns, so that the sheet now contains all the proc-

esses, which can be analyzed in any way desired, with the help of the abstract sheets if necessary.

The abstract sheets can be made to contain items not on the ledger, as, for instance, accounts payable with the disbursement accounts offsetting them, when, as sometimes happens, the books are kept entirely on the plan of receipts and disbursements and nothing is entered on them until it is paid, and yet where there is available a list of unpaid liabilities.

An advantage of this method is that any change made in the books back of an audit can be instantly detected and proved. It is also a safer plan to adopt when the auditor does part of his work in advance of a closing period and then leaves the books, resuming his work later. This is frequently the case about the first of January, when the auditor could not handle the usual annual rush of work, unless he was able to do part of several audits in December. It also enables him at other times to employ otherwise idle days in abstracting parts of a regular audit in advance.

As the columns must always balance, it will be seen that an error in the trial balance will be found, unless it occurs in the accounts receivable or payable, which are treated by totals. A similar method of abstracting them will discover errors there also, as already indicated in speaking of methods of finding errors in trial balances.

However the preliminary work is done, when the actual scrutiny of the books is finished, the auditor takes the results of his investigations to his office and thoroughly studies them. In order to have these in the proper condition to be thoroughly understood, it is necessary that he should have made proper notes of the work as he went along, and it is better always to have these notes on the same sized paper as those containing

the schedules. Many assistants fall into the habit of making notes on ordinary sheets of paper, sometimes of very small size, which are apt to be lost or mislaid, and at best, are not suitable for filing with the other papers. The notes should contain everything important, including the reconciliation of the bank account, a list of vouchers that are missing or not properly approved, and a notation of any irregularities to which attention should be drawn. In making these notes it is imperative that everything be plainly stated, leaving nothing to the memory, and using none but the most easily understood abbreviations. It is astonishing how much a man can forget in a very short time, so that a memorandum which was very clear at the time it was made becomes absolutely meaningless after the lapse of even a few days. It is still more important when the report to the client is to be made up by some one else in the office that all notes shall be intelligible in themselves.

152. *The auditor's report.*—With all the data before him the auditor proceeds to make up his report. When it is to be submitted to men who know little of the technicalities of bookkeeping, the report should be made as simple as possible, and the salient points brought out as prominently as can be done. In order to effect this, it is frequently advisable to depart from the conventional form of statement. Many business men fail to grasp readily the significance of a profit and loss account that is made up in the form of a balanced table, but if the various profit items are listed and the total carried into the last column, and the different expense items are listed and the total carried out and deducted from the total profits, they understand it at once. The distinction between the different tables of a revenue account can be shown equally as

well as in the more formal method. The sacrifice of a little red tape is a small price to pay for the advantage of having a report that any one can understand at a glance, even if he knows practically nothing about formal accounts.

In the letter accompanying the report there should be specific mention of every item to which attention should be called, and a recommendation of every change in methods that may be deemed advisable, or else a reference to them as having been taken up and explained verbally. The auditor must be especially careful to call attention to any points that are not covered by the examination, and to any infractions of the principles of correct accounts. Unless he thus puts himself on record in writing, there is apt to come a time when he is called upon to make explanations and he can do so much better if he can refer to his written warnings, than if he has to depend on his client's memory as to conversations.

Some auditors burden their reports with an immense amount of detail, virtually copying all their notes, while others give only the final net results without showing how they were reached. The middle course would seem to be the best, leaving out all detail that is not essential to a clear understanding of the conditions, but not omitting anything that will lead to a proper comprehension of the business under review or will convey useful information. After calling attention to all the important items that are shown in the statements submitted, the auditor will usually find that he has noticed places where improvements can be made in the method of the accounts or in the office, and he will proceed to recommend them to any extent that he thinks wise. He will do well to confine himself to only a few of

the most important points, unless he has been requested to propose changes, for the ordinary office-man is very conservative and does not like to be told that his methods should be radically changed.

These remarks apply to the ordinary audit which has been made for the benefit of the officers and directors of a company. In the case of an audit made for publication a more formal certificate is given by the auditor, certifying that he has examined the books, accounts and vouchers and has prepared the revenue account and balance sheet, which in his opinion are true exhibits of the business and condition of the company, and this may be qualified by stating that he assumes no responsibility for the inventory, except that he believes that it was taken in a correct manner.

CHAPTER XVII

TESTIFYING

153. *The auditor as a witness in court.*—When the auditor has finished his report, he is sometimes called upon to give testimony in court in regard to it, not only in criminal cases, but often in support of his client's claims in civil suits. His attitude as a witness should be as a strictly impartial judge of the truth as he finds it in the accounts. The lawyer opposed to his client will try to place him in the category of an advocate, but he must strenuously deny the insinuation and assert that his findings are based on the facts as they are and not as his client would like them to be. He must tell the truth and nothing but the truth, but he is not obliged to tell the whole truth, except in response to direct questions; that is, he is not expected to volunteer any information that is prejudicial to his client's interest.

154. *Accountants' distaste for testifying.*—Many accountants dislike the task of testifying, even in simple cases, and will get out of it if they can. Even clear thinkers who are in full possession of all the facts bearing upon the subject and who could lucidly explain them in the quiet of an office, utterly fail to make even the simplest point clear to judge or jury. This may arise from a too technical treatment of the subject that will be so far above the heads of any but experienced bookkeepers that not a sentence is grasped by court or jury, or it may be caused by too great an eagerness

to explain all the steps that led to the conclusion, involving so long a story that the main point is lost in the mass of words, or it may come from an inability to recognize what facts are really important and bear directly on the point he is trying to prove. The opposing attorney is apt to intimate that the auditor is bringing in extraneous matter for the sake of clouding the issue or of manufacturing evidence that does not belong to the case. His only safety lies in not getting excited, in answering deliberately and with due regard to all the possible meanings of his words, and in not answering any question until it is clearly put and thoroughly understood by judge and jury. Many attorneys have so little knowledge of accounts that they cannot put such questions properly, and the witness often sees their errors but cannot correct them, except occasionally by restating his own attorney's question, prefacing it by saying "if you mean so-and-so."

155. *The law of evidence.*—The auditor should have some general knowledge of the law of evidence so as to know what answers are admissible. If he is in doubt he should always wait long enough before answering to allow time for objection to the question and if his answer is interrupted by the offering of an objection he should at once cease speaking and not try to get in his answer in spite of it. A witness who has a fair idea of the rules of evidence can usually tell whither the questions are leading him, and when one question is asked he can readily surmise what the next one will be, and will have time to prepare for it. He will thus avoid being caught in any trap that is intended to discredit his whole testimony by leading him to make statements that are apparently contradictory, although not really so, but which he will find it hard to reconcile un-

less his own attorney is so thoroughly posted that he can extricate him by proper questions.

156. *Methods of the opposing attorney.*—Sometimes the opposing attorney will lead a witness to speak of his qualifications as an accountant with a view to making him appear so conceited that the jury will be prejudiced against him. In answering as to his experience and qualifications the auditor should be as modest as his bump of self-esteem will allow him to be, never volunteering any remarks about important cases in which he has been employed. He can leave it to his own attorney to bring out facts enough to establish his reputation on a proper basis. This leads to the remark that it is important that the attorney and the auditor who is employed by him should have a thorough understanding of all the points that are to be brought out, and the way in which they can be proved in the simplest possible manner. Unless the attorney does thoroughly understand the accounting side of his case the auditor is liable to have a difficult and thankless task before him when he enters the witness stand. Many attorneys know so little of accounts that they blame the accountant when his findings do not help the case in the way they think they should. They are continually discovering the most wonderful evidence from a cursory survey of the books and when the accountant tries to show them that there is nothing suspicious about the particular entries they have unearthed, they think he has become disloyal to the client, or perhaps that he has been influenced by friendship for the other side, possibly by something more substantial.

Above all things the auditor should keep his temper when on the witness stand. Some attorneys delight in saying things during a cross-examination that are in-

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system, which at present is "under a cloud by reason of having been too often seen in questionable company," to quote from a recent article by W. H. Roberts in the *Auditor*. "It has been used and abused by all kinds of office supply dealers, furniture makers and the mail-order crowd generally, until it means almost anything from a set of copyrighted follow-up forms to a stack of vertical files, and it fails to convey to the plain business man any idea of the service which the auditor is able to give."

A goodly number of business houses have been the victims of some of these so-called systematizers who are more anxious to find a customer for their cabinets or their fancy blanks than to furnish an office with a complete and satisfactory system of accounts.

159. *A system should fit the business.*—The auditor who attempts to formulate a system that will fit the office must avoid adopting pet methods or getting into ruts, for if he does he will find himself fitting the business to the system instead of the system to the business, a practice which is said to be the greatest fault of one of the largest of the commercial business organizers. It is necessary to make a thorough study of the whole business, in all of its departments, and then carefully to work out all the details before attempting to put any of them into practice. Otherwise, methods may be adopted in one part of the accounts which will not fit in with those afterwards adopted in another, and the result will be confusion in both.

It is just as well not to state what one expects to accomplish until the whole plan is outlined, when it can be submitted in a general way to the client, so as to obtain his co-operation and support, for without these it is useless to attempt anything. There is sure to be

opposition on the part of some foreman in the workshop, or bookkeeper in the office, who has his own ideas as to how things should be done and who will resent any attempt to change his methods. With the positive backing of the head of the business and a thorough mastery of the problems to be met and solved, and of their best solution, the auditor must formulate his plans and then carry them out without regard to opposition of any kind. But while he must stand firmly for his own ideas, he need not antagonize any one whom he can possibly win over by a careful presentation of the merits of the new methods. It is well to listen to all the advice offered, if too much time is not wasted thereby, and then to ignore it completely, unless, perchance, there is a grain of information to be gained from it.

160. *System-making demands much general knowledge.*—A correct system of accounts usually involves a study of many more things than the books. It is necessary to grasp fully the whole routine of the business, so that the information that finally should appear on the books shall get into the office in the right shape to be properly analyzed and collated. This will mean the installation of proper methods in the shops, the receiving and shipping departments and all other places in the entire establishment where goods are made or handled. In fact, every feature of the whole business should be studied with a view to improving it. A recent article in the *Auditor* gave an instance of the benefit an auditor can render even in regard to correspondence, which would not ordinarily be considered to be within his province. In this case, the auditor noticed letters to parties who had returned goods, in which they were told that the house objected to taking back the goods, that they had been shipped according to orders, that they

were high-grade goods and so on. He plainly told the proprietor that this was bad business, that by forcing the goods on the unwilling customers he might save the sale of that particular shipment, but that he was sure eventually to lose the customer. His advice stopped the practice at once.

161. *Cost systems the work for specialists.*—This whole matter of system-making is becoming a specialized department of auditing, especially with reference to factory costs. It is a very large subject and the field is practically unlimited, but because it is so largely specialized, it is not necessary for even the professional auditor to master it, unless he intends to follow that line almost exclusively. If he is able to institute a proper system in an ordinary office, he can always make an arrangement with a specialist to handle the intricate problems of a cost system, if such comes to him in the course of his regular business. For this reason questions on cost systems should not be asked in the C. P. A. examinations, except perhaps in the most general way. Not to go too far into details, therefore, it is sufficient to say that the idea of a cost system is the placing on the books in a logical way the results of the operations in the factory or shop.

Taking the item of labor, for instance, we find on books kept according to the old methods a constantly increasing debit balance in the labor or wages account, which does not disappear until it is charged to profit and loss at the end of the year. In the meantime it remains on the ledger and trial balance as an asset, or at least on the asset side. Of course, everyone knows that there is no such thing as labor on hand, that it has all gone into the product of the factory. The object of the cost system is to put this labor into the output on

the books, and to do it in such a way that it will be charged to the specific process into which it has gone.

The same is true of the material used. The result should be that there is no balance in the labor account, while the balance of the material account or accounts should show approximate inventory of material on hand. The account with the output should show the amount of material used and of labor expended on each class of the product, more or less subdivided, according to the character of the business or the thoroughness of the classification. The amounts chargeable to each subdivision of the output would be ascertained by a proper system of time cards kept by the workmen themselves or by a timekeeper, and by an adequate system of storekeeping to take care of the issue of material. Details will necessarily vary with the character of the business, the amount of specialization in the factory, and the facilities for gaining the information.

The direct cost will be entirely covered in this way, but there still remains a large element of cost which does not enter directly into the product, such as the labor of foremen and general helpers, as well as what is known as the co-expense, that is the general expense of the whole business including rent, insurance and office salaries and expense, or at least such portion of the latter as is not considered chargeable to selling expense. To allocate these exactly to the different parts of the output would almost always involve too intricate a calculation, while it would often be absolutely impossible. They are usually distributed on the basis of the direct labor, and sometimes, when the system is not pretending to be an elaborate one, by the adoption of what is called an "arbitrary" instead of a calculation each time on the ratio of the direct labor. This is an arbi-

trary percentage of the direct labor based on the results of more or less protracted experience. This is added to the direct cost for a definite period long enough to test its accuracy by comparison with the corresponding accounts when it is readjusted to fit the actual conditions, until it has become so nearly accurate that it can be depended upon to work out in the long run. There may be one arbitrary to cover all the indirect cost, or several to cover subdivisions as the business may demand. When the arbitrary is established, it is possible to ascertain the cost of any part of the product so closely that it is virtually exact, and can safely be used as the basis for figuring the selling price.

The objection is often made by manufacturers that the knowledge of the cost does them little good, because the selling price is fixed by competition and they cannot raise it in any given instance if they discover that the cost in that instance is greater than they had supposed, but the objection is very short-sighted, for the knowledge that one class of their output is unprofitable is bound to be valuable to them if for no other reason than that they can instruct their salesmen not to push the sale of the unprofitable items, but to devote their energies to those that pay better. If they are on sufficiently friendly terms with their principal competitors they may be able to show them that it would be advisable for all of them to raise those particular prices.

In instituting a cost system there is abundant opportunity for the exercise of ingenuity in the devising of methods that will reach the desired information by the least expenditure of time and labor, especially in the factory itself. It will not do to ask the ordinary foreman to keep an elaborate set of accounts. All the data that are made up in the factory should be made as

simple as possible, provided they contain enough information to enable the office to reach the desired results when they are collated. The temptation of many auditors is to make the system so elaborate that it is clumsy and difficult to carry out, so that those whose duty it is to attend to the details soon find the work burdensome and allow it to fall behind, with the result of bringing discredit upon the whole system and causing it to be abandoned. This is especially likely to be the case with systems inaugurated by those so-called accounting companies whose principal business is the manufacturing of stationery, and the selling of cabinets. They are so anxious to increase the sale of their commodities that they multiply blanks, and make the whole system so cumbersome that it breaks in two from its own weight.

162. *Loose-leaf books and cards.*—The auditor is frequently asked his opinion of the advisability of using loose-leaf books and card ledgers. He will often find a considerable prejudice against them in the minds of office managers and occasionally will encounter a man who goes to the other extreme and wishes to adopt the loose-leaf plan in all his books. The advantages of this kind of ledger are so well known that they hardly need to be enumerated, the principal ones being the elimination of all dead accounts, the keeping together of all the pages of each account, however large and for however long a time, and the ability to keep the accounts in a strictly alphabetical order so as to do away with the necessity of an index. As the ledger is not a book of original entry and is not admissible as evidence in court, except as its entries have been identified with those in the original books, there seems no possible objection to its being in loose-leaf form. It would appear less advisable to

have the cash-book take this shape, and auditors usually advise against it, as there is too much opportunity for manipulation by the substitution of one leaf for another. In handling the sales there seems no better plan than the making of a carbon duplicate of the original sales ticket, filing it in a loose-leaf binder and posting directly from it to the customer's account. A recapitulation sheet is provided with columns for the distribution of the sales to departments if the business is so divided, the entry on this sheet being identified with the sales sheet by the numbers of the latter, the totals for the month being posted to the credit of sales account or its subdivisions.

163. *Objection to the card ledger.*—The question of the advisability of the card ledger has been very warmly debated, the principal objection to it being the danger of losing or misplacing a card. Where one man does all the work, there does not seem to be any great advantage, if any, over the loose-leaf ledger, as it takes about as long to find the card, take it out of the drawer and put it back as it does to turn up the account in a ledger that is alphabetically arranged. Where the bookkeeper's time is valuable and he has a cheap assistant, there is possible a saving of valuable time by having the assistant take the book of original entry and pick out the cards on which entries are to be made, piling them up in the order of the entries on the book. The bookkeeper can then post the items without losing any time in turning up the accounts, and when he is through with them the cards can be returned to the files by the assistant.

164. *Modification of the Boston ledger.*—A modification of the Boston, or progressive ledger, that is often advantageous, can be made by the use of the

loose-leaf principle. This ledger carries each account on a line with columns for each month, showing the debits, credits and balances for the month. It is usually ruled with columns for a year's work and all the names are transferred to a new book at the end of the year. The objection to it is not only that all the work of transferring the names is crowded into one month, but that there is a waste of space in the new accounts from one set of columns in the second month to eleven in the last month of the year. On the loose-leaf plan the new accounts each month can be started in the first column of a new sheet, the only precaution necessary being to see that in forwarding totals from one sheet to another they get into the right columns. As the current work will always be in the last occupied column on each sheet there is very little danger of error. In a ledger arranged on this plan, an average of one-twelfth of the accounts will reach the last column and require to be transferred each month, instead of all of them at the end of the year. As a new month is started at the rear of the ledger, the corresponding month of the previous year can be taken out and filed in the transfer binder, so that there will always be one full year in the ledger and no more.

The greatest objection to this form of ledger is that it is not elastic and there is no way of providing for an increase in the number of purchases by any customer beyond the number for which he was originally given space. The billing machine, however, does away with this objection. The advantage of the ledger is that the total debits and credits of the month can be separately proved, and that the trial balance proves at the foot of every page. Another objection is that a customer's

account is strung along a line and there is great difficulty in looking up any past item.

165. *Need for ingenuity.*—The auditor should avoid the error, as we have already pointed out, of having a pet form of ledger or a favorite system of any kind, or he will fall into the habit of trying to fit the business to his favorite method instead of adapting methods to the necessities and best interests of the particular business he is treating. He will not find any ledger or any system of blanks that will be the best for all kinds of accounts, but must exercise his judgment, and will sometimes be obliged to modify his ideas to meet the prejudices of his clients in matters where no real principle is involved. He will find plenty of opportunity for the exercise of ingenuity in devising special forms to take care of special conditions and will find this one of the most fascinating parts of his work, if he has any talent in that direction, and will thoroughly enjoy the satisfaction that comes from the successful solving of a difficult problem.

CHAPTER XVIII

RESPONSIBILITY OF AN AUDITOR

166. *The auditor's duty to stockholders, creditors and investors.*—The position is sometimes taken by a professional auditor that he is responsible only to the person or persons employing him. This is occasionally true, as for instance, when he is employed simply as an assistant to the president or secretary of a company to give his advice in regard to the proper treatment of some or all of the accounts in a report which will be rendered by the officer, and not by the auditor. In such a case he can hardly be said to be acting as an auditor at all, and since he does not give any certificate he cannot be held responsible for anything in the report, unless it can be distinctly shown that he agreed to it. He should be very careful that even this slight connection with the matter is not taken advantage of by the officer, who may incorporate in the report a remark that it was prepared with the assistance of the auditor and thus intimate that it was sanctioned by him.

When a thorough audit has been made and a certificate given of the revenue account and the balance sheet, the auditor's responsibility is not confined to the board of directors or the officers simply because they were the ones who authorized the work. His report, as a rule, is intended for the information of the stockholders, of the creditors and possibly also of intending investors. It will not do for the auditor to suppress any facts because they are well known to his direct employers.

The stockholders are entitled to a full knowledge of the condition of their business, including such a statement of its operations as will give them an intelligent idea of its true earning capacity. They cannot themselves gain this knowledge by a personal examination of the accounts, even if they had the accounting ability requisite for the task. They must depend upon the professional auditor, and when it becomes generally recognized that their confidence in him will not be misplaced, a long step will be taken in the direction of making the periodical professional audit mandatory, either by law or, what is perhaps better, by universal custom. Therefore, it behooves the auditor to be very careful that his certificate gives the actual facts as far as he has been able to ascertain them. The best touchstone he can apply to his report is to ask himself whether he, if he were a stockholder, would be satisfied with it. If he feels that his not divulging certain facts, known to him and not to the stockholder, could give the latter the right to complain of his action, he is not justified in signing such a report.

Mr. A. Lowes Dickinson sums up the whole matter when he says:

> It may be useful to state the position which public accountants claim to take up in giving their certificates. Accounts should show the actual facts, that is to say the profits stated should be as far as possible the actual profits earned by the undertaking, and the wording should be such as to truly and correctly describe the nature of the various items; the balance sheet should show the true value of the assets, or where that is not possible or expedient in the interests of the stockholders, should state the basis on which the valuation thereof is taken, and the excess, if any, over actual value; and the wording adopted should be such as would explain to any reasonable business man the

nature of the items included in each group of figures. The accounts are those of the directors, and they are necessarily the final arbiters of the form which they should take. But, if the independent auditor objects to any of the items as not being properly described, or to the statement as a whole as not showing the true profits or the true values of any of the assets or liabilities, it will be his duty to qualify his certificate by embodying his objection therein. If he were appointed by the stockholders, it would be his further duty in the event of the directors declining to affix his certificate to the accounts, to take the earliest opportunity of communicating his views directly to the stockholders. The reason of this attitude is that the corporation is the property of the stockholders and not of the directors as such, the independent auditor being, in this case, the representative of the stockholders to carry out fully the inspection of the accounts which, in a private partnership, each partner would undertake for himself. The directors, being appointed by the stockholders to manage the undertaking, are entitled to state the accounts in any manner they think fit before presenting them to the auditor. It is then the duty of the latter either to certify that the statement is correct, and shows the true financial position of the corporation, or to specify in what particulars it fails to do so; the stockholders having appointed the auditor are entitled to know his opinion as the result of his investigation, and he is therefore bound to report to them direct if the directors refuse to transmit his report.

167. *Special Investigations.*—Although the word audit is used principally in regard to the periodical examinations of a set of accounts, it also covers cases of special investigation which are usually undertaken only once in connection with any particular concern. These occasions arise when several companies are to be combined into one, when a purchase of a business, or a portion of it, is contemplated, or whenever it is necessary for any other purpose to find out the true condition of a

business at any specified time. The scope of the investigation is determined by the character of the information that is desired and by special circumstances peculiar to each case, and the responsibility assumed by these circumstances.

When acting for proposed investors of capital it makes a difference whether the client is proposing to invest his own money or is a promoter or broker who expects to induce others to invest theirs. While there is responsibility in either event, it is not so great in the first case as in the other. When acting for a client who proposes to invest his own funds, the investigation may be very greatly limited by the client's own knowledge of the business or by his confidence in the integrity of the seller. His instruction to the auditor, therefore, may be to make only a very general examination of the accounts.

It may be asked why any examination at all should be made, if the integrity of the seller is unquestioned. The reason is, because there are many ways of misstating facts and the conclusions that may be drawn from them that are by no means intentionally dishonest or misleading, and yet these may be as disastrous in their effects as if they were deliberately intended to deceive. The annual statements that have been prepared by the bookkeeper of the seller may have been made up on an entirely wrong basis, which even if they were satisfactorily understood by the seller might convey an entirely erroneous impression of the condition and ear- ing power of the business to the intending purch Acting on his client's instructions, the auditor confine his examination largely to the methods by the bookkeeper in preparing his statements and his balance sheet, with special reference to

ciples followed in setting up depreciation and other reserves and in the valuation of stock on hand and other assets. He could assume the clerical accuracy and honesty of the accounts as taken for granted.

In his report to his client he should be careful to specify the limited nature of his investigation, quoting the express instructions given to him as the cause of the limitation. Otherwise he is liable to be blamed for having made too superficial an examination, if it turns out that the client's confidence in the integrity of the seller was not justified, or if for any other reason the investment should result in loss. He may not be able to recall to his client's memory the limited nature of the instructions; which would almost certainly have been largely, if not entirely, verbal.

If the client, even when he is investing his own funds, is a person of little or no experience in business matters, the auditor should not be content to take instructions from him, if in the auditor's judgment they preclude him from taking up phases of the investigation which may seem to be vitally important. He should point out to his client the necessity of the more extended examination, and if his advice is not followed he should in his report call specific attention to the omission.

168. *Great responsibility connected with a merger.*—A much greater responsibility rests upon the auditor when he is employed by a broker or promoter to investigate the affairs of several concerns that are to be consolidated or merged into a new company whose stock is to be offered for sale to the general public on the faith of his certificate incorporated in the prospectus.

Unless the auditor has a sufficiently long and intimate acquaintance with the promoter to inspire him with entire confidence in his integrity, he should very care-

investigate his character and antecedents. While the auditor is concerned only with the facts disclosed by investigations, there is danger, in dealing with an unscrupulous promoter, that some of the facts may be wilfully concealed.

It may be equally important to inquire as to the character of the parties selling their enterprises, if they propose to dispose of them entirely, and also concerning their reasons for selling. While there are plenty of legitimate reasons why a person might wish to retire entirely from a business, the auditor should take especial care under such circumstances to see that there are no hidden reasons for selling, such as a steadily declining business or some new conditions in the trade that will make the business suddenly unremunerative. An unscrupulous owner of such a business might so manipulate things, in anticipation of a sale, as to lead an auditor to give a more favorable report than he would have done if his suspicions had been aroused.

The character of the owners of a business, and of the business itself, is sometimes of importance to the auditor when he is not asked to give a certificate of condition or of earning power, but an apparently innocent statement that the books are correctly kept. For instance, the promoters of a get-rich-quick enterprise might induce a reputable auditor to examine their books periodically and certify simply to their clerical accuracy and then publish a statement that his accounts were regularly audited by Mr. Blank, the well-known accountant. Nine out of ten people, seeing this statement would interpret it to mean an endorsement of the whole scheme by the auditor. The auditor should not allow his name to be used, even in this limited way, in connection with anything that is likely to be fraudulent.

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amounts paid for executive salaries, for salesmen's salaries and expenses in competitive territory, and any other items which may be affected by the consolidation. The directors or promotors can then use these facts to show that large economies may be made by the reduction in the number of executive officers, of salesmen, and so on. As long as the auditor is honestly quoted and a fair use is made of his facts, he is not concerned with the deductions made from them.

171. *Responsibility for accuracy.*—In regard to the responsibility of the auditor for the accuracy of his report, an English court decision says:

> An auditor is not bound to do more than exercise reasonable care and skill in making inquiries and investigations. He is not an insurer, he does not guarantee that the books do correctly show the true position of the company's affairs, he does not even guarantee that his balance sheet is accurate according to the books of the company. If he did, he would be responsible for error on his part, even if he were himself deceived without any want of reasonable care on his part, say, by the fraudulent concealment of a book from him. His obligation is not so onerous as this. Such I take to be the duty of the auditor; he must be honest, i. e., he must not certify what he does not believe to be true, and he must take reasonable care and skill before he believes that what he certifies is true. What is reasonable care in any particular case must depend on the circumstances of that case. Where there is nothing to excite suspicion very little inquiry will be reasonably sufficient, and in practice, I believe, business men select a few cases at haphazard, see that they are right, and assume that others like them are correct also. Where suspicions are aroused more care is obviously necessary, but still, an auditor is not bound to exercise more than reasonable care and skill, even in case of suspicion.

In another case it was said:

Auditors must not be made liable for not tracking out ingenious and carefully laid schemes of fraud when there is nothing to arouse their suspicion, and when these frauds are perpetrated by tried servants of the company, and are undetected for years by the directors. So to hold would make the position of an auditor untenable.

At the same time it has been held by a court that "it is the duty of an auditor of a company's accounts not to confine himself to verifying the arithmetical accuracy of the balance sheet, but to inquire into its substantial accuracy, and to ascertain that it contains the particulars specified in the articles of association, and is properly drawn up so as to contain a true and correct report of the state of the company's affairs."

Again, another judge said:

The auditor's business is to ascertain and state the true financial position of the company at the time of the audit, and his duty is confined to that. But then comes the question: How is he to ascertain that position? The answer is: By examining the books of the company. But he does not discharge his duty by doing this without inquiry, and without taking any trouble to see that the books themselves show the company's true position. He must take reasonable care to ascertain that they do so. Unless he does this, his audit would be worse than an idle farce.

While these decisions somewhat limit the responsibility of the auditor he should not try to evade a just responsibility under the plea of having followed instructions, nor allow himself to grow careless in his ideas as to what constitute reasonable care and skill.

172. *Loyalty to his profession and to his client.*—As a professional man the auditor should not be deterred

by the fear of losing his client from giving advice in regard to enlarging the scope of the work to be done if he thinks the instructions given him were inadequate. He had better decline to do the work at all than to attempt to do it when hampered by instructions that in his judgment will prevent proper justice being done to his client. Above all, he should not allow himself to be influenced by the inadequacy of his remuneration when he has made a contract for a fixed price and finds that he has underestimated the time necessary to carry it out. It is his duty to give his client the best service that he is capable of rendering, and he is not true to proper professional standards if he does not do so, regardless of any personal pecuniary loss that may ensue. The interests of the client must always be paramount.

173. *Responsibility for the work of assistants.*—In an investigation of any considerable size, it is manifestly impossible for an individual auditor to do all the work himself. He must delegate a large part of it to assistants. This does not relieve the auditor from personal responsibility, for it is his duty to employ only such assistants as can be thoroughly relied on, and to exercise such a supervision over them as will ensure the proper carrying out of his instructions. For this reason he should have a staff trained by himself and familiar with his methods, sufficiently large to enable him to have at least one man on each set of accounts that he is examining, if that is possible; and if a sudden rush of work should make it necessary to employ entirely new outside men, he should assign them to the least important part of the whole work, and then watch them much more closely than he does his regular force. This organization of an office will necessitate the employment

of a larger permanent staff than can be kept constantly employed, unless arrangements are made with regular clients whereby their audits can be made continuous.

In order to avoid assuming this responsibility for others, some auditors prefer to do no more work than they can personally attend to, with the assistance of one or two persons working with them. But such men will never attain any high position in the profession and will have no time for study and research. By a proper system of reports by the assistants and a proper method of doing the actual work, the principal can be kept in as complete touch with the work of his assistants as if he had personally inspected the books and made the notes himself. Of course, the more thoroughly trained the assistant is, the less will be the necessity for supervision of his work, but it should never be omitted altogether, even in the case of a regular periodic audit, which has been repeated so many times that the work is almost perfunctory.

174. *Danger of excessive confidence in persons.*—The auditor must be careful not to allow his opinion of the man whose accounts he is examining to warp his judgment. He is liable to become so accustomed to finding the accounts in perfect condition that he is lulled into a feeling of security and will allow some point to remain unguarded through carelessness or a feeling of perfect confidence in the man he is auditing. While it is difficult sometimes not to become thoroughly convinced of the trustworthiness of a man with whom one is brought into frequent contact in a friendly way, it is a dangerous frame of mind to get into and may lead to disastrous consequences. It is the same mistake that many employers make, and against which the auditor is supposed to guard them. It is a little awkward sometimes

to seem to be too particular in asking for explanations from a man whom one does not really suspect of any wrong, but it is better to seem too inquisitorial than to run the risk of having to acknowledge that one has failed in one's full duty.

CHAPTER XIX

CHARACTERISTICS OF THE ACCOUNTANT

175. *The power of analysis.*—Whether a young man should be advised to enter the profession of accountancy depends altogether on the characteristics of the man himself. It is not everyone who can make a good accountant any more than everyone can make a good lawyer or physician. One of the very first requisites is, of course, a mathematical mind, and that phrase implies much more than that a man should be quick at figures. He must be able to see the fundamental principles underlying mathematical calculations, in other words to know the "why" of every mathematical process with which he is liable to be brought in contact.

Closely allied with this is the power of analysis, which will enable him to go to the bottom of a problem or a situation and see clearly what are its constituent parts, which of them are essential and which are merely fortuitous. He must be able to see the relations between different parts of a business and how one part affects another and to recognize the inevitable result of a given line of action. Perhaps the best instance of this power of analysis is seen in a rule recently enunciated in the *Chicago Banker,* by which a bank officer can detect "kiting" on the part of a depositor. It is "that a man's bank movement cannot be greater than his total sales." The only deposits that a man in ordinary business can make must be the proceeds of sales, as he has no other legitimate source from which to get money.

If, then, his sales amount to $300,000 a year and his total deposits of currency, checks, drafts and customers' notes amount to $500,000 during the same time, the absolutely necessary deduction must be made that $200,000 of these deposits are fictitious and consist of exchanged checks, drafts or notes, or in other words, "kites." Yet very few bank officers are capable of applying this simple reasoning to the accounts of their customers, until it is explained to them, although they are all anxious to ascertain the existence of the pernicious practice of "kiting" and to put a stop to it.

If the prospective accountant desires to take up the department of "factory costs," he must be able to understand quickly all the various processes of manufacturing, so far at least as to grasp the relative importance of each to the other and to the finished product. It is not necessary for him to have a practical knowledge of all the details of the various processes, but he should have a good idea of the fundamental principles involved.

176. *Practical experience must supplement academic training.*—The man adopting accountancy as a profession will find out that while an academic or theoretical knowledge of the science of accounting is a valuable thing to have, he must supplement it by a longer or shorter course of actual work, so as to gain the practical experience in the application of his theoretical knowledge. This is true, however, of any profession. The best way to obtain this practical experience is, of course, to ally himself with an established accountant who will always be ready to give him all the aid he can in explaining the problems with which he has to grapple. If he has the natural characteristics that fit him for the work, he will find that his progress will be rapid and

that it will not be long before he will take rank as a senior accountant, to be sent out in charge of work, virtually as an independent man relying on his own resources, with the office to fall back on, if he comes across anything that he does not feel himself thoroughly competent to deal with. The next step would be to set up for himself, or to become a junior partner in an established firm, usually the one with which he has been connected.

177. *The work interesting and varied.*—He will find that his work as an auditor will be interesting on account of its varied character. He is constantly meeting new people and new conditions. There is none of the "demnition grind" about his occupation, for one day he may be investigating a small retail store and the next a large railway company. He is obliged to familiarize himself with all classes of business and to learn more or less of all kinds of processes. He learns a great many trade secrets even where they may be in actual violation of such laws as the Pure Food acts. He finds out, for instance, when he proposes to institute a plan for ascertaining the relative cost of making different kinds of fruit jellies that there is absolutely no difference between them except the labels on the jars and that they all cost the same. He will be sent to all parts of the country, with his expenses paid at the best hotels, and will probably be well treated by the people to whom he is accredited.

178. *Many business men unaware of the auditor's importance.*—He will find that the field for the exercise of his talents is practically unlimited, and that the appreciation of his services is growing constantly and at an increasing rate. But he will meet with many disappointments, for he will find that it is uphill work to

educate the ordinary business man to a proper sense of the benefits to be derived from a scientific treatment of his accounts and of his office methods. The man who will welcome any suggestion in regard to better machinery in his factory and will go to almost any expense to expedite the work there, will not be able to see that it is worth while to spend even a small amount to perfect the work in his office, but will be content to do things the way his father and grandfather did. One satisfactory feature of the situation, however, is that when a man is once convinced that the accountant has rendered him invaluable service, his conversion is complete and he becomes an enthusiastic advocate of new accounting methods and is always ready to introduce the accountant to his friends and to recommend his employment.

Since the establishment of the different societies of accountants in the various states there has been very little jealousy among the different members of the profession, and a feeling of mutual helpfulness has been developed, which is extended to the new men entering the profession from time to time. There is plenty of room for all who are determined to do good, honest work, and the older accountants are ready to give every assistance to active, progressive men, who give promise of developing into thoroughly competent members of the profession.

CHAPTER XX

THE CONDUCT OF AN AUDIT

179. *The preliminary step.*—In describing the proper way to conduct an audit there will naturally be many points repeated that have already been treated of. Their repetition will do no harm if it serves to impress them more firmly on the mind.

In a first audit a general study of the whole business must be made, so that all its peculiarities will be thoroughly understood. Notes should be taken of the principal points in the articles of partnership or of association, the different duties assigned to partners, or to officers, and any other points which would affect the conduct of the business. A sketch should be made of the character of the business, the articles manufactured or dealt in, the methods of recording transactions, with special reference to the presence or absence of internal checks on the accuracy of the accounts, both in regard to those dealing with cash and those that record the movement of material and goods from the time they are received until they are finally shipped out. In doing this, there will necessarily have to be made a list of the books that are in use, and of the persons who are authorized to receive or pay money, sign checks and approve vouchers and to order goods. The authority exercised by these persons may be derived from the articles of partnership, the by-laws of a company or the resolutions of its board of directors, or may have developed gradually by virtue of undisputed custom, without any

formal grant. With these data well in mind, and with a general idea of the customs that prevail in the particular line of business engaged in, he will be able to conduct, not only the first, but all subsequent audits in such an intelligent manner that his report will furnish much more valuable information to his client than the mere facts that his books are in balance and that all the money received has been satisfactorily accounted for.

180. *Proving the cash balance.*—In proceeding to the actual work of an audit, the first step would be to prove the cash balance. As it is seldom possible to verify the cash at the point where the cash-book has been footed in ink and ruled off, the auditor should add all the columns of the cash-book, copying the totals in his notes to be again compared with the cash-book at the next audit. He should see that there were no checks in the cash that did not represent entries in the cash-book, and should list all due-bills and other non-cash items. He should have the bank account balanced and verified at that time and should prove it back to the reconciliation made at the end of the period covered by the audit. The accuracy of the receipts shown by the cash-book for more or less consecutive days can be verified by obtaining from the bank copies of the deposit slips for those days and comparing them, item by item, with the entries in the cash-book. The disbursements must be verified by comparing the items in the cash-book with the checks and with the vouchers, seeing that the latter are properly approved and that they are supported by invoices showing the receipt of the goods or by evidences of services having been rendered. In a columnar cash-book special care must be taken to scrutinize all items of any considerable size that appear in the

columns devoted to any expense account. In general, any unusual or extraordinary payment or receipt should be carefully noted, and if any payment is of such a nature that it should not be allowed unless authorized by the directors, reference should be made to the minutes to ascertain whether proper authority for the entry is to be found there.

181. *Importance of the journal entries.*—Some auditors seem to think that the journal needs but a perfunctory scrutiny. It is so easy to make a journal entry take the place of cash that has been abstracted that it is important that competent authority should be produced for any journal entry involving more than trivial amounts, which affect any of the profit and loss accounts. If there is a charge in the journal to any partner or officer, his approval should be written by him either on the journal itself or on the journal-voucher, if such vouchers are used.

182. *Purchases and sales must be on the books.*—The purchase and sales books should be examined to see that the proper returns of purchases and sales are made by each department; that the invoices are properly entered and are checked as to quantities and prices by the proper persons. As far as possible, it should be ascertained that all liabilities for goods purchased are on the books and that no sales are recorded that have not been shipped, or at least segregated from the inventory. Unless there is a proper system in the receiving room, it may not be possible to detect omitted liabilities at the time, but they can be found out later by noting the dates of the bills paid subsequent to the audit, and if any of them are dated prior to the end of the period covered by the audit, ascertaining whether they had been included in the outstanding liabilities at

that time. Bills payable that have not been entered on the books can not be discovered if their proceeds have been credited to the personal account of an officer or partner as a cash payment, unless there are charges for interest paid at dates when no note transactions appear on the books. The auditor is not blameable for not discovering such undisclosed liabilities, unless some such clue is to be found in the books.

183. *Method of checking disbursement vouchers.*—When checking the vouchers for disbursements, the auditor should always mark each voucher with his initials in ink or with a special rubber stamp, or both, so that it will be impossible to pass the same voucher twice or run the risk of having a different voucher substituted after the audit. It is impossible to obtain satisfactory vouchers for individual items on a pay-roll unless it is paid by giving a bank check to each man. Ordinarily the auditor must be satisfied with knowing that sufficient internal checks on its accuracy exist, from its having been made up, checked and paid by so many persons, and in such a way, that it would require collusion between two or more to perpetrate a fraud. In auditing the petty cash, the auditor can hardly expect to find satisfactory vouchers for small items, such as carfare, but his experience will soon teach him to judge whether the items are reasonably correct.

184. *Verification of securities, etc.*—Notes receivable should be inspected by the auditor or evidence of their being out for collection obtained from the banks or other collecting agencies in whose hands they may be. Bonds, mortgages, and other securities should be verified by actual inspection. If it is necessary to verify the ownership of land, it is not sufficient in this country to inspect deeds to the property. It is necessary to ex-

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surance and interest paid in advance, and of accrued liabilities, not yet due, for such things as bond interest and taxes.

187. *The balance sheet.*—In the balance sheet assets subject to depreciation should be shown at their full value, with the reserve deducted from them and the net amount carried out. The same treatment should be given to the capital stock if there is any treasury stock or unissued stock on hand. Accountants differ as to whether a balance sheet should be made up with the most liquid assets first, proceeding gradually to the most fixed, or whether the order should be reversed. Whichever plan is adopted, both sides of the balance sheet should follow the same rule.

188. *Advantages of the abstracting method.*—The abstracting method of verifying the accounts of a business has been sufficiently described in the foregoing pages. It necessarily proves the additions of all abstracted columns and all the postings to the general ledger. All other columns should be added by the auditor, or at least such frequent tests made as to amount to the same thing. It is not usually necessary to add both the total and the distributive columns in such a book as a purchase register, but it would be necessary to verify the additions of any columns representing capital expenditures, as well as to verify the nature of the items.

189. *Essential features must be covered.*—Each auditor is liable to have his peculiar methods, and each concern that is audited is liable to have peculiarities that will need special treatment. The only point that the auditor should be absolutely sure of, is that he covers every essential feature of the work so thoroughly that there will be no danger of anything having been overlooked,

PART II: COST ACCOUNTS

CHAPTER I

INTRODUCTION

1. *General explanation of factory cost accounting.*—Cost accounting is that branch of accounting through which is obtained detailed information of manufacturing activities, or cost of manufacture, to guide the general as well as the minor administrative policies and to provide a means of determining a basis on which sales may profitably be made.

Modern business life, with its extraordinarily keen competition, has forced contractors and manufacturers to adopt methods to disclose, more minutely and with greater precision than formerly, the cost of production. The procedure, it is frankly admitted, may be overdone and the business may often be over-systematized, as will be shown by concrete illustrations hereafter. In fact, a critical study of the conditions prevailing in the great manufacturing establishments results in the conviction that great dangers are to be apprehended in connection with systems that are too complicated, not being systematic and giving records that confuse instead of enlighten.

2. *Relative value of cost accounting systems.*—With different manufacturing organizations the nature of the detailed information required will differ to such an extent as to justify the statement frequently made that

the conclusions of the cost accountant are valueless separated from the particular problem which he has had under consideration.

The manager of a small plant will be satisfied to know roughly the cost of articles produced, so he may reckon the general basis upon which it is profitable to sell the product, and be able to compare the efficiency of the men or machines during different periods. Those in charge of larger operations desire that their cost systems shall show the exact results of purchasing the material, locate and expose unnecessary losses, and supply suitable statements of the progress of the manufacturing departments. Great corporations may have several departments of the same general nature, and by comparing the cost sheets from each, the management can readily tell the comparative efficiency of those in charge of the work. By tracing the differences in cost of the same product, process, or operation the cause of such differences may be revealed.

A cost system properly administered should reveal the inefficient department management, the uneconomical process, or provide for suggestions for new equipment or for a change in the handling of the old equipment. Even when the expenditure cannot be reduced by the cost system, the knowledge of the exact cost would be advantageous and an intelligent guide to the sales department. The author believes that in the majority of plants there are leaks that a proper system and thorough organization would at once bring to light; and it is a very common experience that the elimination of leaks so disclosed very often results in making the dividends once regarded as satisfactory look inappropriate.

3. *Necessary standards of systems.*—The competent

manager desires to possess some reasonable standards of general efficiency for the plant and once such standards are properly established, the discovery of the cause of the discrepancy between them and the actual results will be the subject of constant effort. This difference must be due to errors in plans of organization and to the methods of administration.

How may the necessary standards be established? By a simple system of analyzing and stating costs for a single task for man or machine, or for a combination of both for any period, or for all the work of a section or department, or for a whole plant when such costs have been obtained for several previous periods, we can obtain the standards in conjunction with the actual observation of the work in hand. When such standards are once obtained, a proper factory system will permit parallel statements, the actual cost side by side with the standard. The whole organization plan is indeed thus illuminated and a measure is taken—a test applied—which will result in a recognition of every economy, and therefore, in an effective effort to accomplish proper results. Everyone contributing to results is held responsible and knows what is expected of him, for he is directly connected, through the cost system, with the brain center of the business.

4. *Purpose of cost accounting systems.*—The ordinary classification of costs depends upon the purpose for which each system is installed. It must be mentioned in this connection that the nature of the information desired will differ not only with the size of the business, but also with the nature of the product. The whole structure of a system must be built upon a definite purpose. "What information do we want through this system?" is the first question when we encounter

the problem of the installation of a system. Then comes the question: "How do we get the information?"

We may enumerate generally several classes of cost systems:

(a) One in which the records are kept according to order numbers, a cost recapitulation sheet being kept for each separate order. Under general conditions of manufacturing it is imperative to know the cost of production for each job or lot. The contractor must know exactly the conditions under which he should enter into a contract, and the statistics of the cost of the same or similar work will aid him greatly in his decisions as to the present and future.

(b) One in which the records are kept according to departments of production. The conception and administration of a department is different in different establishments. In case the organization provides that each department manufactures goods differing from the output of the others, each is similar to an independent factory finishing a special product. Often a department is organized to embrace a group of related processes and operations where it requires various departments of this nature to complete the product.

(c) One in which the records are kept not by departments, but subdivided, conforming to the various parts of an article of production. To illustrate: Machines may be composed of many parts and it may be impossible to determine the exact cost of the whole machine without an analysis of the cost of its parts. The comparison of the cost sheets for varying periods is valuable only when the details are given. By an elaborate record the cost of each operation on each piece may be known. In many lines of manufacture such records

are considered too elaborate, the administrative advantage being too slight to justify the expenditure.

5. *Unit cost system.*—Let us take the department of the first class. We desire to know the general efficiency of the department, and also the cost per unit of production. The comparison of cost departmental sheets for different periods, or those from similar departments at different locations, allowing for varying conditions for the same period, will yield valuable information. In order that such comparison may be effective, the cost sheet should be so ruled that the items of cost will be grouped according to the analysis, and provision should be made for a summary of the result. It should also provide for a record of the quantity of goods. The total of the cost in the particular department is divided by the quantity produced. This is sometimes called the "Unit System" because the burden of the whole department or the factory is divided according to the unit basis as per ton, per gross, or per barrel. This method is often not only generally profitable but in fact indispensable in flour mills, steel mills, cotton mills, coal mines, etc.

6. *Department costs.*—Next we will consider the department organized to embrace a group of related processes. Here also the management desires to have disclosed the efficiency of departments, and separate cost sheets will be kept for each. The cost sheet must be ruled so that the compiled or accumulated costs of each process or operation may be indicated. It will also contain a record of the quantity of work passing through the department according to the unit of measurement. The cost of material plus labor turned over to the department from which it came, added to the cost incurred in the department now responsible, will con-

stitute the total cost of production of the goods turned over to the department to which it goes. This total cost divided by the quantity of production will give the cost per unit, which is made up of the combined costs of processes or operations.

7. *Dangers encountered in installation.*—Often cost system campaigns end in failure. Managers are often reluctant to incur an increased cost in order to effect direct supervision through a cost system. Failure is frequently due to the inefficiency of the cost accountant, or to his inability to install a plan that will secure immediate practical results. The professional accountant may forget that his first duty is to provide not what he thinks the management ought to want, but the information the client himself needs in solving the factory problem.

On the other hand, it is the height of folly for a manufacturer to inaugurate a cost system unless he is prepared to expend time, thought, and money to secure its accuracy and general efficiency. A rough and ready system may be instituted with inconsiderable expense, but because of its incompleteness the accuracy or inaccuracy of its results can never be determined until it is too late to apply the remedy. It is a dangerous but common practice for the manufacturer to place reliance on a system so loose and slipshod as to be entirely misleading.

Too much emphasis cannot be placed upon the detailed study of the particular problem in hand before an endeavor is made to apply a cost system. Weeks and months of intensive study may be an economical investment of time and money as a prerequisite, and as a proper preparation for a determination as to the basis of the system to be used. This feature of manufac-

turing cost accounting will be dealt with in other chapters, but it is emphasized here to put the student investigator particularly on his guard against a natural tendency to apply a remedy based upon inadequate study of the subject-matter.

8. *Necessity for knowledge of exact costs.*—As we have already mentioned, a cost system is intended to aid the manufacturer or contractor to gauge intelligently the amount of profit which may be secured in connection with the enterprise under consideration and to fix a price for the article to be sold. Such a system will also be a help in determining the quantity and value of the work to be performed, either in connection with machinery, or independently thereof, in connection with bids to be made, or contracts to be awarded in competition. It is universally conceded that some sort of an adequate cost system is absolutely necessary for the successful conduct of a factory. It is, therefore, somewhat of a shock to students of commercial life to observe in these days of generally improved business methods that a large proportion of those competing for trade do not know the cost of doing the business.

Special investigation which the author has made in preparation for this volume has resulted in the conviction that 90 per cent of the smallest manufacturers have no conception of the cost of the completed article except insofar as it affects the larger items of direct labor and raw material. All students and writers on this subject agree that it was perhaps unnecessary and inadvisable under conditions which formerly prevailed for much time, money, and thought to be given to this subject. In pioneering days in manufacturing occupations, the conditions of competition were not so severe. Those conducting the business operations could determine in

a rough way, not only the elements of outlay necessary and appropriate in connection with their own affairs, but that of their neighbors' and competitors', and "near enough" was the rule. In the absence of statistics something akin to intuition was the guide, and exactness was the exception. If the business was profitable it was generally so manifestly profitable that the question of boundaries of profitability and definite determination of fair profits seemed a waste of time.

9. *Value of specific information.*—In manufacturing accounts we examine not so much the ultimate figures which may be affected unfavorably by commercial considerations (quite outside the manufacturing operations proper) as the means and methods which have led up to these results. It is manifestly injudicious to deal with lump sums and to leave unrecorded for the purpose of comparison the intricate details of daily work: those so-called trifles which by reason of being repeated day by day form so large a proportion of the total expenditure of effort, time, and money and the neglect of which too often neutralizes all the advantages of careful organization in other directions. Indeed it is a very common misconception that prevails with reference to specific information of this sort in connection with all lines of commercial activity.

Proper administrative and executive control cannot be exercised unless the various elements are disclosed by adequate information. For example, the general manager of one railroad property, before decisions may be given respecting important matters, demands that most particular and definite information be placed before him respecting past operations in connection with the same subject matter. A proposition may be presented involving the character of the ballast to be used

and material for culverts and bridges, character and type of signal service, electric devices in operation at various points, and the manager demands for his intelligent enlightenment and guidance, not only the experience of others, but the experience of his own particular road in connection with the matters involved. How long certain material has served the corporation, whether its life is proportionate to its cost, whether the service is adequate when compared with the service obtained from other material and in connection with similar operations—these are material questions.

The various types of managerial minds demand information of differing character. One official will consider the propositions and pass upon them upon information that another would consider ridiculously inadequate. Some men arrive at a conclusion instantaneously by a sort of divination or intuition, while others work over the elements and statistics with the greatest care and much deliberation, requiring information of the most minute and precise character. Therefore, systems must be planned to meet, so far as may be reasonable and expedient, the needs of the administrative head, the personality of the management being highly important in connection with this subject.

10. *Necessity for close analysis and interpretation of expenditures.*—General managers often affect an attitude of despising cost accounting data and from long experience may have acquired a general knowledge which enables them to give quick offhand decisions, but the experience upon which they base
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erring character of their intuition in matters affecting scientific costs, and oppose reasonable provisions for accumulating proper factory accounts. In this way they unwittingly sacrifice the best good of the enterprise for the sake of calling attention to their own superior gifts in the line of curbstone opinions constituting perhaps remarkably accurate guessing. Modern organization insists on doing away with the necessity of guessing. "Where various classes of things are being simultaneously made, something more accurate than practical instinct is desirable as a guide when it is necessary to decide which line it will pay to exploit commercially to the greatest degree." In a very small undertaking this really very small instinct which men possess may be sufficient, but the moment the work gets too large in volume for all these minute details to be carried in one's head, then the necessity for a close analysis and interpretation of expenditures becomes marked.

11. *Processes and procedure to be abandoned.*—In connection with new processes under consideration for adoption, a proper system of cost accounting is particularly valuable. Conditions are now such in business circles that turns must be made quickly, and processes and procedure that were considered satisfactory and adequate yesterday must be abandoned to-day, and something new substituted. What shall be substituted? is the enquiry. The new material that is to take the place of the old is in itself a particular problem.

The treatment of the material under to-day's conditions is another special question, the determination of which results in success or failure. The machine that is to take the place of the old one to be abandoned is a problem, and the work of that old machine, and what

it has done in connection with its combination with direct labor, is to be compared with the performance of the new machinery under consideration. Problems of this nature arise in a modern business so rapidly as to tax the resourcefulness of the management to the greatest possible extent and the adequacy or inadequacy of the data furnished by the cost accounting system determines the success or failure of the work. A cost system is necessary even when the market price is definitely fixed or at least limited by competition.

12. *Cost accounting systems in coal mining.*—Let us consider, by way of illustration, the situation that prevails in relation to coal mining in Illinois. The market price on Illinois coal is fixed by competition, we will say for example at $2 per ton in cars on track at Chicago. This is not necessarily the price to retail dealers but to the wholesale or jobbing trade. The operator of coal mines must produce the coal and sell it at that price in Chicago or not enter the market at all. If he not only mines but sells it at retail, that is, in less than carload lots, he is in reality engaged in retailing with all of its perils, and must sustain the retailers' expenses and risks. Thus the wholesale basis is the proper one for illustrative purposes. Included in the selling price, are the freight rates from the producing point to the Chicago market, the selling expenses, etc., also the various elements of the complete mining cost which must be rigidly analyzed.

First, there is the mining rate, or price per ton paid to the operatives or "diggers" who separate the coal from the vein in the mine by pick or machine work combined with the operation of blasting with explosives, load it into mine cars to be transported through the mine passages or underground runways, to the "cage"

or hoist, thence to be raised to the surface and dumped over screens into the railway cars.

In addition to the mining rate, there is the cost of this underground hauling and that of raising the material to the earth's surface, the cost of unproductive labor in rock on the "roof" and "bottom" of the "room" in the mine, this "unproductive" work being necessary for the conduct of the mine. That is, the roof, or rock overhead must be, in many cases, taken down or "brushed" to provide working space in thin coal measures to enable the miners to get the coal out to the best advantage. What would be true in case of very thin veins of coal would be more or less necessary in the case of thicker veins. There would in any case be extra work in the shape of labor in going through certain irregular formations or "faults" in the coal vein; there would be props or timbers necessary to keep the rock from falling in upon the operatives. These supports would vary more or less, depending upon the "integrity of the roof material" and the character of mineral, rock, or soil between the coal and the surface of the earth. There would also be various supplies or materials, such as the powder necessary for miners' use in separating the coal from the mass underlying the surface and powder or other explosives required for driving additional passageways in the mine, or blasting "off the solid."

There would be also the services of superintendents, foremen, and others working by the month or by the day, not directly in aid of the production of any particular ton of coal but generally in aid of the operation of the mine. There would be various general and incidental expenses indirectly affecting but not specifically chargeable to the production of any particular ton of coal that must be sold at the $2 assumed wholesale price

in Chicago. In other words, the staple price, which is made almost necessarily uniform by competition, includes many items that are not readily discoverable.

In general, it may be said that the cost would be first, labor directly applied to the production; second, material directly applied to the production; third, material that may be either directly or indirectly applied in aid of production—for example, the timbers or "props" referred to may be furnished for a mine and labor may be required to fit those timbers to the use in supporting the roof, and this may not have a direct application to a particular unit of production and may be aiding in the production of many thousands of tons of coal that will be marketed in the future. For the mine operators, or proprietors to say that the expense of any of these items, however insignificant, is a matter of unconcern to them, would indicate a feebleness of intellect justifying an expectation of ultimate bankruptcy, if not immediate insolvency.

13. *The situation possible if there are two coal mines.*—Suppose, for example, that the mine operator has two mines, producing coal and forwarding it to market. The mining rate, we will say by way of illustration, is the same in both properties. This might lead the uninitiated and careless proprietor to assume that other expenditures were in proportion, whereas they might be of a widely varying nature.

One mine superintendent might hold his per month or per day or per ton men responsible for the execution of a large amount of work and enforce such execution by administrative methods in which he was particularly gifted, whereas another, with an easy-going disposition by slack and careless methods might produce, with the same men, a much less tonnage.

One superintendent with the shrewdness of a careful buyer might provide props, caps, and other material for his mine at the very lowest possible price, whereas another would recklessly pay prices disproportionate to the true value and thus unduly increase the cost of production.

One mine manager might hire general helpers, machine men, pipe men, pick men, blacksmiths, etc., capable of very efficient service and thus develop increased tonnage, whereas the other might either pay too high a price for services, or fail to demand an adequate amount of labor in proportion to the price paid. One mine manager might, with the aid of expert engineering assistance, economically and properly locate the mine with reference to the conditions to be overcome, water, haulage, etc., whereas another might, either from lack of experience or skill, administer the affairs of the mine in such a way that the conditions of mining would be costly and the burden of expense inordinately high.

14. *Comparison of costs.*—It is only by comparing the results of the administration of two or more properties, bearing in mind, of course, the actual difference in the conditions, that one is able, from the standpoint of the proprietor, to determine what *is* satisfactory cost.

Again, for example, one mine manager may have unusual difficulties to overcome, difficulties inherent in the material to be used, excavated, or removed, whereas unlike conditions may prevail in the other mines. One property may be so located that employés may be secured at the minimum wage rate, and the other, by reason of labor conditions, compelled to pay as a premium a much higher rate of wages. The freight and switching rates may be lower proportionately for one property than another, and all these actual differences

must be taken into account. These differences should explain the variations in the cost of production at the different mines and proper allowance should be made for them in making the comparisons.

If it is found that under substantially similar conditions, one man is able to administer the affairs of the mine at a much less cost than did the other, the result may be either removal of the inefficient manager or improvement in his record based on the disclosures made by the administrative data thereby furnished.

15. *The demand for results.*—The cry for results is an exceedingly keen one in the commercial world. Results are demanded from operatives and from operators, as well as from minor officials, and from machines, tools and structures; and this cry for *results* is continually and almost momentarily made in a great model business establishment. What have been the results? What are the results? What results may be expected? These questions are continually heard, and if they are not heard and heard frequently and loudly, the indications are plain that the business is suffering from "dry rot."

Business organizations, the human organizations, depreciate as well as buildings. Men who were alert and thoroughly equipped last year may have degenerated into inactivity this year. Systems that were all embracing in good results and sufficient in the past, develop fatal weaknesses in the present. These weaknesses are not in every case easily detected but the defects are not latent nor yet entirely patent, as will be seen in a later chapter. Just as thorough bred horses will degenerate, become logy and lose ambition and spirit under unskillful handling or with unintelligent guidance, so will a well-organized force in a factory

under unsuitable leadership lose the emulative spirit and grow dull with respect to the spirit of performance and careless in matters affecting wastefulness in the handling of material and in performing operations in connection therewith.

16. *Importance of proper classification.*—In this connection it perhaps would be appropriate to refer to the importance of classifications. If in a legislative expense voucher the classification is used "freight on exhibits," "travelling and incidental expenses, $46,038.40" and it develops that the freight charges included in the item were only $38.40 while the travelling expenses approximated $46,000, including expensive valet attendance and a courier throughout Europe, the classification has been misleading in that it gives a false impression by using the term "freight on exhibits" as a catch word. One would naturally conclude a large amount of the total was freight, while in connection with the other item it might be supposed that the amount was insignificant. Thus a term such as is quoted, either intentionally or otherwise, deceives the one who is supposed to be guided by it and to whom it is intended to give information.

Proper classification gives information; improper classification, misinformation. The subdivisions of a classification skillfully achieved makes it easy to detect wrong and furnishes a scientific basis for comparison by which responsible heads and subheads, superintendents and foremen may be brought to account for their own and their subordinates' performances.

17. *Attitude of management.*—A proper attitude with reference to this entire subject and correct attention given to the elements of cost will effect a remarkable change in the economic situation and prevent the

establishment of new factories, opening of new mines, and the development of new industries when such additional activities are unnecessary, unjustifiable, or can be dispensed with in aid of preservation of proper conditions of trade. With the aid of suitable and not too elaborate cost systems, the management will be enabled to create or so modify arrangements of productive forces as to obtain better results with a given cost or equal results with a less cost of production. The management with a proper cost system can hit upon that harmonious combination which will give the largest profits under the given external conditions. The economic waste will be greatly reduced and the general productive efficiency increased.

18. *Analysis of various cost accounting systems.*—There are a great many kinds of systems for obtaining costs in connection with factory operations and there are innumerable combinations suitable to the peculiar and special circumstances of each case. Certain general divisions may be outlined, but these should invariably be considered with reference to the immediate situation in hand and the character of the factory, together with the special product which is being treated, and the problems confronting the management.

There are systems which are based upon order numbers and when this method is appropriate the records should be kept by order number and all expenses incident to the work should be listed under the particular number that is to result in a record known as a "cost sheet." The cost sheet form under this plan should be so arranged with spaces and rulings that the items of expenditure will be kept according to the logical arrangement for the analysis which is so important, and provision made in the blank for the aggregate or re-

capitulation or subanalysis with reference to the cost record.

19. *Separate records for each department.*—In connection with some factories which are organized by departments, a cost system is suitable which keeps the record of expenditures for each department separately. The sheet should be so arranged as to provide for a record of the quantity of work passed through the departments, the cost of labor and materials and other items which, in view of the character of the work, are necessarily included in the summary of results. A cost system may also be provided to give the required data for intelligent administration by operations necessarily involved in the factory processes. In connection with this method a cost sheet is provided for every operation or single process and the sheet arranged to accommodate such information. There should be an arrangement of columns and blank spaces to provide for the amount of work which is treated in the particular process that forms the unit of cost, and for a summary of the results.

20. *Recording of expenditures according to machines.*—In addition to the plans above referred to there are cost systems which record the expenditures of the various elements according to machines and this is known as machine cost, the items of expenditures being kept for single machines or those in groups. The blank should be arranged to set forth results from operating a given number of machines, and in a specified time. With each one of these systems it is planned to secure a minute analysis and a close estimate of expenditures in connection with the subject matter, and based upon the information disclosed the analysis feature is of the greatest importance to indicate the cost of each manufactured article, not only as a whole, but of each process

employed as one of the elements to produce the ... It must be remembered that the entire purpose ... cost accounting work is to indicate the probable ... cost for present administrative guidance and to ... ble those who have charge of the business to determine the price at which it is profitable to sell, to indicate whether manufacturing shall continue to produce goods for a certain market when the price cannot be advanced, to indicate whether still other reductions may be made to provide additional margins of profit. There are cases where the price is fixed in the market by ignorant competitors, who inaugurate their operations with adequate capital, and where it may take several years of slip-shod methods and of administrative acts prompted by impulse and not based upon adequate data of the actual or approximate cost of conducting their business, to bring about actual insolvency. The entire subject of cost accounting is to be considered not only with reference to its advantages to the manufacturer who employs a proper system, but also with reference to its educational value in inspiring others who may be working in the dark with reference to their costs and so manage as to secure appropriate information as to the actual results. The advantages accruing to society in general by preventing waste and misdirected energy tend to suppress activities that are demoralizing in an economic sense.

21. *Safeguarding the factory from inefficiency.*—A most important matter to be considered in connection with the cost system is the safeguarding of the factory from inefficiency and the providing of classifications of expense as will not result in hiding unprofitable results. Properly classified information is an enemy of inefficient factory management. By the use

of adequte classifications the manager can locate the cause of the variations in the cost of production. This will result in a full appreciation of the situation even though the increased cost may at the time be unavoidable by reason of carelessness and negligence of men available for employment. An intelligent appreciation of danger has promise in it and is apt to result in future improved conditions. A failure in such appreciation, or a failure of the system employed to disclose the weakness of administration methods precedes, and is naturally followed by financial ruin.

22. *Ultimate results the thing to be considered.*—General results and general classifications incapable of analysis tend to disguise and hide losses that might otherwise be disclosed. Efficient and intelligent work in one department of an office may be neutralized and made ineffectual by wastefulness in another. In connection with this subject it is worth while to notice here that when a business is established and the investment has been made, operations may sometimes continue for a limited period during which the cost is perilously near the selling price in order that operations may not be discontinued with destructive consequences.

For example, a factory that is capable of producing ample goods for its market and which for several months each year may find itself supplied with orders at a margin of profit that is entirely satisfactory, may, during a limited number of weeks or months be brought face to face with the necessity of operating at cost or less in order to continue in employment operatives who would otherwise go to competitive establishments and be unavailable at a time when factory operations might be resumed with profitable results. In other words, frequently the manufacturing corporation must lose tem-

porarily in its operations, "holding its breath" until the danger period has passed, for the ultimate good of the business. The manager must have a broad view in considering figures and principles of cost accounting, looking at the ultimate results as well as at the immediate conditions; considering the entire situation by seasons and in connection with varying markets rather than be guided by the figures representing the present performance in factory operations or sales.

The study of the particular business to be affected by the system is so fundamental and of such vital importance that the author is constantly tempted to renew the emphasis he has placed upon it. The typical factory that is visited will contain men of all grades of efficiency and energy, men that have grown gray in the service of the factory and who are now perhaps ineffectual; men with and men without enthusiasm and alertness; those who are constantly seeking and those looking to avoid responsibility; and those eager to perform tasks greater than the ones which have been imposed upon them and those desiring to avoid such duties.

The labor of men is much more variable than the performance of machines and it is with reference to this item involving dissimilar effectiveness and merit, that a system should be applied for the greatest possible benefit. If the labor account is not analyzed to determine where changes are appropriate, where corrections should be applied and faults remedied, the system is weak and unworthy. Every item of cost which can be distinguished from every other should be so separated, and every result which can be intelligently distinguished and separated from every other should be so separated.

It is a very common fault of those who devise cost accounting systems to provide over abundantly and with

the greatest profusion, forms, blanks, and safeguards seeking to locate responsibility in connection with the passage of material from the storehouse to the place where factory operations are to commence, but it should be borne in mind that the more simple and direct the system the more rigidly it will be adhered to. The object to be sought for is the prevention of confusion and the creation of an aid instead of an intolerable burden. In other words, many so-called cost accounting systems result in such an over-developed heavy mass of detail as to render them objectionable.

Again the student is cautioned that in this there is a tendency to extremes. As Mr. Clarence M. Day has observed, "The result is frequently an enormous amount of labor without any valuable return, and quite as often as not the main objects of cost accounting are swamped in a mass of valueless detail." Not only is the purchasing and storing of goods important and the accurate record of issuance of material to factory, which has been called the "melting pot" for material, labor, and expenses, but it is also of the greatest importance that the cost of goods in process should be carefully watched and kept under scrutiny during the period of manufacture. When the goods are charged out by the store-keeper to the division, section, or department representing the work in process, then is a charge made in the general ledger to the manufacturing account, "goods in process," or to some account of a similar appropriate name. In other words, the aggregate of the items of material, labor, and expense will appear in the general ledger in such manufacturing account, and will also appear in the cost sheets in highly specialized items appropriate for such process.

In Chapter VI an explanation is given of the system

of the Bridgeport Brass Company showing debits and credits to the stores departments, representing material received and issued, and debits to departments or divisions under appropriate classifications. Credits are given to such accounts, and debits to the production account, under whatever name is appropriate to represent properly the work in process, and debits for all cash or other items of value represented by contracts, purchases, and accounts receivable.

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sufficiently into detail, it is probable that
cost of identical products at different loca-
conditions, handled by different employés,
different methods, will not be indicated, and

that the purpose of cost keeping will be defeated. If the system is too complex, it will be slow and heavy, may break of its own weight, and its results may be reached too late to apply corrective measures.

The successful system must be along lines coming within these limits and for a beginning it is believed that it should be as simple as will secure results with a view to its expansion along such lines as experience may show to be desirable. It should, however, be planned to have the cost accounts square in or be in agreement with the general fiscal records. The additional expense of such a detail is usually more than compensated for by the check thus afforded upon both systems and the additional respect which cost data from such systems receive. While exact agreement is the accounting ideal, approximate agreement will secure valuable results; and if absolute accuracy can be obtained only at a great expense such approximation may be sufficient.

As the results are valuable, primarily, to the administrative officer in direct charge of the operations covered by the cost accounts, he should suggest the lines along which they should be kept, and should know of the steps followed in its processes, and thus he will be able to judge of its results. He need not prepare the forms or keep the records—bookkeepers and clerks will be available to perform such service—but he should be able to judge of the quality of the work submitted upon the outline he has laid down.

24. "*Keep Committee's*" *definition.*—Cost keeping is that branch of accounting which is concerned with the segregation of the various items of expense, incurred in the prosecution of a single piece of work, from among all other items of expense incurred in a general line of industry, and the setting over against the total of such segregated items the quantity of resultant work or product. The definition of cost keeping as a part of a general system of accounting can, perhaps, be made clearer by the following contract, wherein under "scope of general bookkeeping" we include all fiscal transactions of every class, and under "scope of cost keeping" such transactions of each class as are necessary for a complete cost system for so much of the

organization's operations as the system is intended to cover. Commercial accounting is more and more nearly approaching the ideal as to costs, but it is not yet the universal rule to have commercial bookkeeping show a complete analysis of the purpose of all transactions.

General bookkeeping, as here used, includes every transaction which involves the fiscal condition of the organization.

25. Comparative scope of general bookkeeping and cost keeping.—

Scope of General Bookkeeping	Scope of Cost Keeping
General bookkeeping is concerned with all	Cost keeping, on the other hand, considers only those
A—*resources;* valuable assets of whatever nature available for use in the operations of any business, whether or not actually employed;	A—*resources* which are employed in the operations for which costs are sought, as the materials and supplies consumed and the plant employed, but not any unproductive capital which may be held for future use;
B—*liabilities;* indebtedness, without regard to how or when incurred;	B—*liabilities,* or portions thereof, which are incurred wholly for the given operations, as the indebtedness for materials and labor used, but not borrowed capital, nor the indebtedness for unused material purchased against possible rise in price;
C—*income;* cash receipts, whether from earnings, borrowed funds, or other sources;	C—*incomes* which are drawbacks or direct repayments upon the elements of cost entering the given product as refunds of paid over-charges on any kind of expense entering the product,

	but not receipts for product previously manufactured and sold;
D—*expenditures;* cash disbursements, whether in payment for material and labor furnished, repayments of loans or dividends;	D—*expenditures* which are the measure of certain expenses incurred in producing the given output, but not payment of liabilities generally;
E—*gains;* whether resulting from productive operations, or from the enhanced value of assets either fiscal or material;	E—*gains* which are drawbacks as referred to under income, but not profits in general;
F—*losses;* whether resulting from productive operations or from other causes, as trade conditions, material disaster, litigations, etc.	F—*losses* which are industrial, such as depreciation of buildings and equipment, but not those which are commercial, such as bad debts, etc.
General bookkeeping as a rule considers the operations of an organization, both fiscal and industrial, as a whole or in large sections. Its entries cover, generally, the exchange of value between individuals or independent organizations. It does not take account of inventories of materials, of machinery, tools or equipment, of plant, or of other valuable assets; nor consider the questions of depreciation, fixed charges and liabilities accrued but not due, except at periods of profit taking.	Cost keeping considers the industrial operations of an organization in detail, but is not concerned in its purely fiscal transactions. Its entries cover the movement of values within the organization itself rather than between it and others. It must consider the inventories of all materials, plant, etc., from day to day, and take account of depreciation, fixed charges and liabilities accrued, in proportion to the charge which these expenses become upon the articles of the finished product.

The contrast between general commercial bookkeeping and cost keeping is not always clearly drawn. In fact, the two purposes are often attempted in one scheme of accounting where the product is practically uniform and the operations are continuous. In such cases a good system of analytical bookkeeping is often sufficient when an analysis is made according to the purpose as well as the nature of the expense. For example, the accounts of all plants for the production and distribution of power, heat, light, or water can probably be best handled by such a method. Unit costs may be obtained by making a summation of the charges to certain accounts and measuring the amount of the product or output for the period covered by such accounts.

The diagram here inserted, from the work on "Cost Accounts" by L. W. Hawkins, chartered accountant, is designed to show the relation between the cost accounts and the general accounts in graphic form, and to illustrate the principles which have been discussed in relation to this subject. From the time sheet the entries may go to the recapitulation or abstract of wages and from that abstract postings may be made through the cost journal, or direct to the journal accounts in connection with direct wages. The same entries for example would appear in the time sheet, in the wages record of the cash-book, the general wages account, the general journal account and the direct wages account. In considering this diagram it should be borne in mind that the author has in contemplation a system of accounts peculiar to the jurisdiction in which he writes.

26. *Commercial test of success.*—In the commercial world, profit is the test and measure of success. Profit is the excess of value received over the entire cost of producing and marketing. Competition makes price fixing a matter largely beyond the control of the producer; therefore, the possibility for increased profit lies only in a reduction of the cost of producing and marketing. Usually this cost is made up of various elements of expense, and it is necessary to get at the proportions and amounts of such elements in order to learn where it is possible to economize without injuring the product.

We thus come to the governing principle of cost accounting, which, by collating such information, enables the producer to know the amounts of the several elements of expense which have entered into the total cost of any piece of work, and from such information to develop more economical methods for the conduct of future operations.

27. *Cost accounting not in conflict with financial accounting.*—There is no conflict between cost accounting and financial accounting. Quite the contrary, as cost accounting is founded directly upon ordinary double entry principles. It may be sufficient for the financial books to show what the total amount of the pay roll is for a certain department of the business operations. The picking to pieces, however, of that pay roll may be necessary for cost accounting purposes and this is a detail of the financial records. The total cost of such separated items in cost sheets should agree with the total which appears upon the financial books. The items that are to appear in cost accounts are frequently denominated cost statistics for the information of persons entitled thereto and interested therein, to guide them in their judgment, whereas no division may be necessary from the standpoint of the one responsible only for general financial results. It may, for example, be sufficient for the financial statement of a great railroad corporation that the amount expended for "repairs of roadway" be reported in one lump sum, whereas for the guidance of men responsible for certain special departments of railroad activity it may be vitally important to subdivide these repairs into hundreds of different accounts, each of which represents an important item in itself of railroad cost accounting. One of the classifications entering into the manufacturing account set forth on page 247 may be entirely satis-

factory from the standpoint of the individual who seeks a general knowledge or the ability to determine the healthy condition of the entire business, but in this form it may be entirely unsatisfactory and fail to convey administrative guidance to one who is responsible for some specific activity included and merged with others or with other departments and other movements.

28. *Manufacturing account in detail.*—Taking another illustration of a concrete nature, let us consider a piece of furniture as the article manufactured. The manufacturing account may even go to the extent of showing the value of material bought, cost of lumber, varnish, glue, cane, and the labor applied to same, freight on material, general expense of manufacture, repairs to machinery, water, light, oil, superintendence, insurance, taxes and factory material expense. These items may all go into the production or manufacturing account and form a summary that will perhaps be wholly satisfactory from the financial standpoint. But, there is an infinite amount of information that is incidentally covered up by such general figures. One chair may be of a little different type or shape from another resulting in an increased cost due to the necessity for the use of special machinery. It may need more lumber than another, more glue, or demand a different quality of varnish or require a greater amount of labor for assembling the parts. There may be, in connection with a lot or bundle of one thousand chairs, a substantial difference in the total cost sufficient to interest those in charge of the particular department in which the goods have been produced.

The information as to the exact difference in the cost of items in types of articles should be available and should be separately stated as an aid in determining

whether the increased cost is justifiable or whether the trade will pay enough more for the article to permit its production at the increased cost. A subdivision of the expense of labor which is reported in lump sum under the head of manufacturing labor may disclose the fact that under one foreman men will produce much more expeditiously than under another, will handle material more economically, will put the various parts through the machinery faster and with less waste, or with better discipline. These items of information are of the most vital character to those who are responsible for the successful internal workings of the entire manufacturing department. Any general figures of manufacturing expense, material expense, manufacturing labor, etc., are utterly inadequate to disclose the inequalities resulting from difference in energy, alertness, judgment, and general capacity.

29. *Many good men not interested in costs.*—It is very difficult to account for the indisposition on the part of small manufacturers to go into the subject of detailed costs except upon the theory of mental inertia affecting certain subject-matter. Many men are alert in the broadly constructive side but weak in executing or supervising such details as may be involved in the cost accounting work. The more vigorous a manufacturer may be in general organization expedients, the weaker he often is in connection with such precise tasks as are involved in work of the description herein advocated. Many men are constructed to make money, but not to save money; to project and exploit, but not to conserve. They can lay out campaigns of the most brilliant character in general organization, but it requires another and a peculiar and unusual type of man to change and revise matters which have become involved

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for many years in a line of manufacturing where the margins of profit had been so very large and satisfactory that it had been thought unnecessary to spend any of their valuable time in the analysis of cost sheets, and they were loath to believe that their operations could have resulted in the sale of many thousands of manufactured articles at an absolute loss.

The consideration of the actual figures has resulted in marked changes and a complete revolution within the factory referred to. Each department or process is now represented by a cost sheet which details with the utmost precision and exactness every item of cost for the department, and the various foremen are "pitted against" each other for results. The wholesale price had to be raised somewhat and the cost of the completed article reduced a trifle in order to provide a proper and adequate margin between the cost and selling price. This situation is unquestionably duplicated throughout the country, not in any particular line but in various general lines of manufacturing industry and particularly in factories managed by self-confident men who have had successful experience in other departments of commercial activity.

31. *Elementary principles applicable to cost or factory accounting.*—In order to appreciate fully and completely the elementary principles applicable to cost or factory accounting, it will be necessary first to determine the relation of this subject to ordinary financial accounting, and for that purpose to consider briefly the elementary principles involved in bookkeeping, meaning the general records of the entire transactions, involving the physical condition of the organization.
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have resulted from transactions of business such as: the resources, liabilities, revenue, capital, receipts and expenditures, and profits and losses. If the accounts are properly kept, the amount of loss or gain which has resulted from operating the business will be made apparent. If the result exhibits a net gain, the fact is determined that there has been an increase in the net capital assets. If there is a net loss, that result shows that there has been a decrease in the net capital assets employed in the business. These results may be determined by the application of principles involved in the current valuation of the property actually used in the business itself or held as free assets in the form of investments. The amount of loss or gain may be determined relatively in a very crude and elementary way by simply preparing a statement of resources (what the business owns) and liabilities (what the business owes) as of a certain specified time and comparing the figures obtained and exhibited in this statement with those shown on a similar one of the same general kind of facts prepared at another time. A gain is shown if there is on the statement now prepared: First, either an increase in resources while the liabilities remain the same; or, second, an increase in the resources to a greater extent than the increase in the liabilities; third, a decrease in the liabilities while the resources remain the same; or, fourth, a decrease in the liabilities to a greater extent than the decrease in the resources.

To summarize these four classes, it may be said that a gain will be evident if the amount by which the resources exceed the liabilities is greater than when the last similar form of statement was prepared. That is, if the excess of resources over the liabilities is greater, or if the excess of liabilities over resources is

less, now than formerly, the difference measures a gain. A loss is shown if there is on the financial statement now prepared; first, an increase in the liabilities when the resources remain the same; second, an increase in the liabilities to a greater extent than the increase in the resources; third, a decrease in the resources when the liabilities remain the same; or fourth, a decrease in the resources to a greater extent than the decrease in the liabilities.

To summarize respecting losses, it may be said that a loss will be evident if the amount by which the resources exceeded the liabilities is smaller than when the last similar financial statement was prepared. That is, if the excess of resources over the liabilities is less, or if the excess of liabilities over resources is greater, now than formerly, the difference measures the net loss. If the only object of account keeping were to determine whether, as a result of the operation, there has been on the whole an increase or decrease in the net wealth, this result could be determined in a rough way without keeping any accounts at all, but simply by taking an inventory of what was owned (as resources) and what was owed (as liabilities) on two separate dates and comparing the results. This would show the bare fact of gain or loss, but this kind of information fails to satisfy anyone. The mere fact that the net capital or difference between the resources and liabilities has increased during a certain period, standing alone, by itself unexplained, is an aggravation rather than a source of satisfaction or enlightenment, for questions concerning the details immediately arise in the normal mind.

If the net result was a gai
activities of a manufactur

in two departments the question might be asked, "Did we make $25,000 in one department and lose $10,000 in another to result in this net gain of $15,000, or did we make $7,500 in each or did we make $14,000 in one department and lose $1,000 in another?"

If there were ten departments embraced in the business, the question might be asked, "Did we make a gain of $3,000 in each of eight lines amounting in all to $24,000 and then lose $4,500 in each or $9,000 on the two other lines to bring the net result down to $15,000?"

It is plain that the bare facts showing a better or worse condition as disclosed by the inventory of property and debts, is no adequate or satisfactory information to guide the management for any administrative purpose whatever. Unless the merchant or manufacturer can know what departments or operations produced a gain or what transactions caused a loss and to what precise extent, he is powerless to apply an intelligent remedy. Correction of a difficulty cannot be made until the defect is located, and on the whole, it is entirely insufficient, unsatisfactory and futile to determine a loss or gain from a study of the variations in the present worth. Accounts in the balance sheet tell the present condition as to property, but do not dispose of questions involving the causes contributing to such present conditions. Statements of the same kind made at a previous date tell the condition as to property at that time with no explanation or statement of facts showing why the condition was as therein set forth, why it was not greater, or why it was not less.

32. *Explanation or nominal accounts.*—As a development from the crude facts, showing solvency or insolvency, of the amount of net gain, which might be made up from insufficient gains merged with unneces-

sary losses, or of a net loss, which might be made up of unnecessary losses merged with inappropriate and insufficient gains, there grew up in the history of accountancy explanation accounts, minutely subdivided, which record the facts necessary to identify the character of the various expenditures which appear on the loss side of the loss and gain account, and of the gross earnings which will appear upon the gain side in order that they may be compared, analyzed, dissected, subdivided, and considered individually as well as collectively, and in various combinations and groups for administrative purposes. These explanation accounts are sometimes known as nominal accounts, not representing property or debts at all, but in reality setting forth a narrative or an explanation from which may be determined the reason why there is not more property or less, or why the debts are not more or not less.

As an illustration of such explanation accounts the following may be named as common objects of expenditure: freight, labor, repairs, salaries, superintendence, expenses (under various heads), insurance, interest, taxes, heat, light, oil, supplies used, etc. As an explanation of nominal accounts in regard to gain, the following may be mentioned: sales of products, discount on purchases, increase in property values, interest earned, rent, sales of power, commissions and royalties earned, etc. In other words, these nominal accounts serve to tell the story of daily transactions to show the cause or object of the outlay where money has been paid out and the source of the money that is received indicating the object of disbursements and the origin of income. Transactions in every kind of property may result in a profit or loss. In the manufacture of any article there is a combination of costs, the more common

elements being raw material, labor, supplies, superintendence, and resulting from the operations performed upon or in connection with the combination of these elements there is a completed article which is in the course of commerce offered for sale. The result of the sale is the receipt of cash, or an account against some purchaser, or in some other form of value. The comparison of the values so received with the values expended for the items named results in a determination of the fact of profit or of loss and how much.

It transpires, therefore, that explanation accounts properly classified are necessary to give adequate detailed information and to determine the acts of administration that should be done or left undone in order that the business operations may be more profitable.

33. *Character of organization.*—In view of the fact that 90 per cent of the manufacturing business is done by commercial organizations in the corporate form, the fact should be emphasized constantly, and unceasingly pressed upon the attention of the business community, that the real power in connection with a corporation is vested primarily in the stockholders, who have a right to share in the earnings, if there are any, and to participate in the assets of the corporate estate upon final dissolution, and that the stockholders choose the directors who are especially chargeable at law and in business practice with the duties of the management. The directors should be and are ordinarily chosen on account of their representative capacity, but not particularly because they are men of active business habits. They usually receive no compensation for acting as directors, except occasionally a fee for attending meetings. They elect and delegate to the officers of the company duties in connection with the management. The officers are in

reality agents of the corporation and of the directors, in carrying out, ministerially, the duties that the directors themselves should rigidly supervise. A chart of the organization of the corporation would show as a basis the power of the stockholders flowing from them to the directors and through the latter in well-defined legal channels to the officers.

34. *Responsibility involved in factory operations.*—In connection with the subject in hand it is assumed that the president, or the vice-president acting in his stead, has general oversight of the business of the corporation, but that the management is vested in a general manager or general superintendent who, in turn, assigns specific duties to the works manager or superintendent of production who passes along the necessary authority to the foremen of departments. In connection with the actual working out of any special plan of organization of the modern factory there may be a chief engineer, superintendent of departments of experimental work, chemists, master mechanics and various officers with peculiar and special duties depending on the type of organization.

Plans of organization along the general lines of the one referred to have been developed by gradual evolution. The more or less rigid requirements of to-day differ so radically from the former type as hardly to be recognizable. Each individual, under proper conditions, is now held responsible for the particular work entrusted to him, responsible in reality, and in the strict sense that he is definitely required to compete with every other servant, agent, or officer of the organization having similar duties: in the sense of being required to keep his costs down; to account to his superior officer for every increase, or for a failure to decrease the cost;

for any irregularities in the progress of the work in the form of delays and interruptions; for the smooth-running of the department, subdivision of the department, or branch, and particularly with reference to the increase of expenditures in character and amount. The haphazard method of running a factory has been superseded by scientific methods and there is to-day accountbility for time, accountability for material, accountability for labor and accountability for expense. The items of expenditure are divided and subdivided and re-subdivided so that light may shine through and around them, and so that there may be a clear conception of every detail.

85. *Manufacturing costs.*—In connection with the business of manufacturing it will be observed that there are transactions affecting primarily only the factory side, and that there are outlays relating to transactions affecting the sale of goods. There are also financial transactions having to do with the conduct of the business which are neither the one nor the other, but apparently in a strict sense, administrative, not distinctly for the benefit of manufacturing or trading, and yet which affect both of these branches of commercial activity.

Let us assume that the factory under consideration consumes material and supplies which the manager prudently buys in advance of real needs, employs labor, incurs obligations to pay factory rent, taxes, expenses for fuel, freight, insurance, etc. These items we now assume are strictly on account of manufacturing and have primarily nothing whatever to do with the other activities or departments of the organization. Items of this character should be rigidly segregated in order that the officials in charge of the manufacturing may be held

accountable for the expenditure therefor. The records must show that the department is prudently managed and there must be absolute and direct responsibility for obtaining the very lowest prices and the best possible terms, employing in full the entire benefit of the "purchasing power" of the organization in connection with contracts entered upon.

In this connection, emphasis must rest on the responsibility of the factory manager for making such arrangements with labor that the manufactured products may not be harshly affected in cost as compared with competitors, and that the employment agreement by its terms and in the practical working out may endure on the best permanent basis. Kindred to this and also of the greatest possible importance there is the problem of the management of labor so that the greatest amount of efficiency, individually and collectively, may be developed in the various departments and in connection with the various operations. The aggregate of expenditures for raw material, for labor and for expense entering into the manufacturing side of the business should be set forth in illuminating and self-explaining classifications separately, subdivided appropriately, and a total obtained which will result in a necessarily crude, but in the main a satisfactory showing of manufacturing cost in certain simple lines of business.

36. *Classification of expense.*—In addition to this manufacturing expense section there arises naturally, as stated in connection with the compilation of the losses and gains of the business, two additional subdivisions known as trading or sales accounts and also general expenditure or general profit and loss account, that is, a statement of expenses and earnings not assignable to either the producing or selling activities. In the man-

ufacturing account as shown, would be included in the cost of manufacture the stock of raw material or such material modified, by which is meant material on which some labor has been applied prior to its purchase, less discounts on purchases, less inventory at the end of the period, productive labor, freight on purchases of material, factory repairs, superintendence, depreciation, insurance, rent, and taxes. And, on the credit side, offsetting the items referred to will appear items of income, such as earnings on account of steam power furnished, the difference between the debits and the credits appearing as a balance item which is carried down to the trading or sales account section.

In connection with this having to do with the commercial disposition of the product, which has passed through and had its origin in the factory, will be found appropriately a record on the debit side, of transactions that have had to do with the cost of selling, salesmen's salaries, their traveling and incidental expenses, salaries and expenses of officers to the extent that the expenditures are attributable to the selling department, discounts and allowances to customers, outward freight and cartage to get the property to the point of delivery represented by the contract of sale, and special items representing contingent losses in book account. On the credit side appears the total of the sales of the products manufactured and the balance is carried on to the section representing general expenditure or general profit and loss account.

There are many items that cannot be brought within the scope of either the manufacturing or the sales department, and which occupy the third group of expenditures referred to. The debits to the general account in this section will be the salaries of general offi-

cers and clerks, general expenses, interest and discount connected with the entire administration, collection and exchange, miscellaneous charges incurred for the benefit of the establishment as a whole and the conduct of its general activities, the stationery and printing expenditure, or rather, in some cases, the balance of the items referred to which have not been apportioned arbitrarily between manufacturing and sales. There may be also in this third class interest on capital invested in the business as a whole, in cases where such capital may not be apportioned so as to show the amount locked up strictly in the factory, or in the general working capital of the establishment applicable to the factory, the exploitation, organization, and the office; and used to carry the accounts of customers and for the general purposes of the business.

To recapitulate: These three natural divisions of expenditure that would appropriately go into the general loss and gain account are, in modern practice, separated in order that the management may determine roughly the extent of the disbursements for manufacturing and selling and consider the advisability of curtailment or of further expenditures and the policy with reference to the development for the future. This first crude division of profit and loss accounts may not in extensive operations determine satisfactorily the exact relative efficiency and economy of the manufacturing as compared with the sales department or test the alertness of the selling force as compared with the producing force. But even this simple arrangement and these subdivisions may assist the management to ascertain in general the cost of production as compared with the cost of selling and generally to throw light upon certain of the intricate problems of management and give

data which would make it possible to eliminate at least easily discoverable causes of loss and develop plans that promise gain.

37. *Consideration of some primary facts in accounting problems.*—In order to illustrate what has been said with respect to the classified profit and loss statement and what has been said with reference to the net gain being shown from a comparison of balance sheets, attention is directed to Table 2, which, like Tables 1, 3, and 4, is founded upon the primary facts shown in Greendlinger's "Accountancy Problems" (second edition),[1] showing the balance sheets, December 31, 1896, the profit and loss credit balance being $13,925. The increase in the profit and loss credit balance in Table 3 to the sum of $21,335.90 indicates that there has been a net gain of $7,410.90 during the year. It does not indicate how the profit was made nor show the manufacturing account expenses as distinguished from those of the selling or trading account to indicate the efficiency of the manufacturing as compared with the selling division, either of which might have been conducted improperly and still show a satisfactory result when all the figures are merged in one item.

During the year it will be seen from the facts shown that assets have increased $93,535.90, an increase of $7,010.90. That the liabilities have decreased to $72,-200, a decrease of $400 and that the profit and loss balance, the amount necessary to make the two sides of the account equal is, in Table 3, $21,335.90, an increase as stated in the net gain of $7,410.90. This kind of information is all that a very large number of establishments appear to desire. The figures showing the gain in profits for the year 1897 give what is re-

[1] Published by Business Book Bureau, 13 Astor Place, New York City.

garded as satisfactory information although nothing is shown concerning the origin of the gain. It would perhaps be very difficult to convince those in charge that in one department of the factory they may have made $12,410.90 and in another lost $5,000, which would result in the net gain of $7,410.90. In other words, the gains coming from various undisclosed sources and the losses from numerous obscure causes are merged and the identity of each lost in a statement of this character.

38. *The revenue account.*—To bring out certain of the facts in the form of a revenue account or detailed classified profit and loss account, attention is directed to Table 4, which is drawn from the items shown in the trial balance, Table 1. Items applicable to manufacturing and also to trading and those of a general nature are here separated as definitely as the information given permits.

This, it will be seen, is a disclosure to an extent of the history of the business during the year 1896. A comparison may be made of the disposition of various disbursements for different purposes with payments of the same class referable to the balance sheet in Table 3. By a comparison of the classified profit and loss account in Table 4 constructed from facts in Table 1 and one constructed from the facts resulting in Table 3 it is possible for the management to determine with a fair degree of accuracy, certain definite facts and perhaps even in connection with other data to ascertain the wisdom of the purchasing policy; whether or not new purchasing or selling markets should be sought; whether or not a more alert, experienced and active purchasing agent should be employed; whether certain articles now purchased may more profitably be manufactured; whether certain raw material heretofore attainable through certain

sources might be had cheaper by making other possible business combinations; whether purchases were not in fact made recklessly and without the patient study necessary to take advantage of the fluctuations and manipulations of the market; whether the inventory at the end of the year was properly and painstakingly set forth; whether the proper rules for inventory taking were applied not only at this time but one year previous; whether the productive labor during the year was properly negotiated and adequately supervised. In this way each separate item on the debit side of the profit and loss statement would be compared. From a beginning as simple as this, a system is developed to allocate the items of expenditure in connection with the various (a) order numbers; (b) departments, divisions, or sections; (c) the operations or processes; or, (d) the machines, depending upon the kind of system adopted.

In Table 3 the items of material on hand and purchased would be in the custody of the storekeeper and would be cared for and issued out, to the value of $30,000 on written requisitions as shown in Chapter IV on "Material." The item of productive labor, $24,000, would be represented by credits to pay roll and charges to the various order numbers, departments, operations for machines, as shown in Chapter III on "Labor." The items of rent, fuel, general factory salaries, insurance, depreciation, interest on capital invested in the factory, and all such costs would be distributed as burden in accordance with the principles explained in Chapter V.

Other items appropriate to the manufacturing, selling, and general sections are illustrated in the description of the various manufacturing operations as follows:

TABLE I.

TRIAL BALANCE OF A & B CO., JAN. 1, 1897.

Capital Stock		$60,000.
Plant and Machinery	$35,000.	
Purchases	38,000.	
Sales		95,000.
Stock on hand Jan. 1, 1896.................	15,000.	
Labor	24,000.	
Salaries	9,600.	
Travelling Expenses	2,500.	
Interest	600.	
Stationery and Printing	1,200.	
Rents and Taxes	3,500.	
Discounts and Allowances	1,250.	
Fuel	3,000.	
Insurance (One yr. from 7/1/96)..........	1,150.	
Freight	1,500.	
General Expenses	600.	
Bank Overdraft		5,000.
Creditors		4,000.
Accounts Receivable	25,000.	
Rent of Steam Power......................		1,500.
Cash on Hand	200.	
Loan Account	7,000.	
	$165,500.	$165,500.

TABLE II.

BALANCE SHEET OF A & B CO., AS OF DEC. 31, 1896.

ASSETS			LIABILITIES		
Cash		$ 200.	Capital Stock		$63,600.
Debtors (Accts. Rec.)	$25,000.		Bank Overdrafts		5,000.
Less Discount at 3%	750.	24,250.	Creditors (Accts. Pay.)	$4,000.	
Loan Acct. Bills Rec.		7,000.	Profit and Loss Balance		13,925.
Inventory 12/31/96		23,000.			$86,525.
Insurance Unexpired		575.			
Plant and Machinery	$35,000.				
Less Depreciation	3,500.	31,500.			
		$86,525.			

TABLE III.

BALANCE SHEET OF A & B CO., AS AT DEC. 31, 1897.

ASSETS			LIABILITIES		
Cash		$ 475.00	Capital Stock		$63,600.00
Debtors (Accts. Rec.)	$26,970.00		Creditors (Accts. Pay.)	$4,600.	
Less Discount at 3%	809.10	26,160.90	Bills Pay.	4,000.	8,600.00
Loan Acct. Bills Receivable		6,500.00	Profit and Loss Balance		21,335.90
Inventory 12/31/97		23,800.00			$93,535.90
Insurance, Unexpired		600.00			
Plant and Machinery	$40,000.00				
Less Depreciation	4,000.00	36,000.00			
		$93,535.90			

TABLE IV.

PROFIT AND LOSS ACCOUNT OF THE FIRM OF A & B CO., DEC. 31, 1896.

To cost of raw material			By rent of steam power (Earnings)	$ 1,500.
Stk. at beginning.	$15,000.		By Balance to Trading Section, being cost of manufacturing	64,575.
Purchases during yr.	38,000.			
	53,000.			
Deduct. invt. @ end of year.....	23,000.	$30,000.		
Labor (Production)......		24,000.		
Rent, Taxes of Factory..		3,500.		
Fuel (Power)		3,000.		
Freight (Inward)		1,500.		
Insurance (6 mos.)......		575.		
Depr. on Plant and Machinery (10% on $35,000.)		3,500.		
		$66,075.		$66,075.
To Mfg. Sec. (Cost of mfg.)		64,575.	By Sales	95,000.
Travelling Expenses, Salesmen		2,500.		
Disc., Returns and Allowances		1,250.		
Reserve for losses on book debts (3% on $25,000.)		750.		
Salaries, Proportion of..		6,000.		
Sta. & Ptg. & Office Supplies		1,200.		
Exp. and Sales General..		600.		
Bal. carried down........		18,125.		
		$95,000.		$95,000.
To Interest		600.		
Proportion Officers' Salaries		3,600.		
Net Profit		13,925.	By Bal. Brot. Down.......	18,125.
		$18,125.		$18,125.

Professor Greendlinger, in his work "ACCOUNTING, THEORY AND PRACTICE," sets forth the character of the items that will appear on the debit and credit sides of the manufacturing and trading account as follows:

1. Debit side.

(a) Raw materials at beginning of given period.

(b) Goods in process of manufacture at the beginning of a given period.

(c) The net cost of goods purchased during a given period.

(d) Freight inward paid on raw materials purchased.

(e) Labor expenses. The total of these charges may be called the prime cost of the manufacturing account.

2. Against these charges the credit side of this account will show:

(a) Raw material on hand at the end of the given period.

(b) Cost value of the goods partly manufactured and remaining unfinished at the end of the given period.

After making all these deductions there will remain the first cost of the goods completely manufactured during the given period. This balance is usually transferred to the second section of the manufacturing account, which contains the following items:

Debit side.

(a) Transfer from prime cost (balance of first section of manufacturing account).

(b) Factory expenses, such as rent and taxes of factory and buildings used for manufacturing purposes, fire insurance on buildings, etc., accrued whether paid or unpaid.

(c) Supervision; wages of factory workers, watchmen and other men whose wages cannot be applied to prime costs.

(d) All such charges as repairs and renewals for machinery and tools, ordinary wear and tear on machinery, tools and building (known as depreciation).

Against this, we will have on the credit side, as a deduction, the item of expense on partly manufactured

goods on hand at the end of a given period, which, of course, is not a proper charge against this period's work. The balance then remaining is called the first charge against the cost of production.

The discount on purchases might appear on the credit side of the manufacturing account, which would be equivalent to showing it as a deduction from the inventory. In either case the result is the net amount of the raw material represented by the inventory, and the subtraction of the inventory at the end of the period leaves the amount consumed as the charge to manufacturing cost. In the case of royalties it should be impressed upon the reader that royalties earned should be credited here only to the extent that they are attributed to the financial period under consideration. Trading account always begins with the balance brought down from the manufacturing account and selling expenses, advertising, travelers' salaries, outward freight, and kindred items shown as debits, to offset credits resulting from sales less returns.

39. *Analysis of a trial balance.*—Cost accounting is invaluable when intelligently administered, but any system of factory accounting must fail unless there is some administrative officer with sufficient ability and sound discretion to see that items are rightfully determined and assigned to their proper classes. Let us assume that the following items appear in the trial balance of the A and B Company and that they must be dealt with in determining the cost of the manufactured article. Discount on purchases; good-will; royalties; interest paid in advance by the company; interest (paid to the company before due); commissions (partly paid in advance and partly earned; rent (paid in advance); fuel (partly consumed and balance on hand).

Discount on purchases.—This account must appear to reduce the manufacturing cost and should operate as a reduction from raw material purchases, being an amount saved by the payment for material bills within the period prescribed in the contract of purchase.

Good-will.—This account is, under certain circumstances, a proper one to carry on the balance sheet, at least for a limited time under conditions set forth in the work "ACCOUNTING, THEORY AND PRACTICE, Volume III of *Modern Business,* but any amount charged off into operating expenses that fairly represents the factory operations should appear appropriately in the record of costs.

Royalties.—When this account represents royalties paid in connection with manufacturing, the item should appear in the manufacturing section of the classified loss and gain account and in the cost sheets upon a basis to be determined. If any part of the amount represented in this account, however, is paid in advance to cover articles to be manufactured, only such portion of the total as represents goods actually manufactured during the period should be included and the balance of the amount should be carried into the balance sheet. If the royalty account represents earnings by the company, being royalties which the company has paid and which will appear in the manufacturing section lessened by the royalties earned, it may appear as a credit, being treated in the same way as rent of steam power.

Interest paid in advance by the company.—Such an item, to the extent that it represents interest not accrued is an asset to the corporation and is not an expense and should not appear in the loss and gain account.

Interest paid to the company before due.—This account to the extent that it is not accrued represents a

liability of the company to parties making the payment and should not appear in the costs.

Commissions, partly paid in advance and partly earned.—If this account represents commissions paid by the corporation to the extent that they have not yet accrued they will not appear in the cost sheets. If this account represents earnings by the company only such portions as have accrued will appear as credits in the appropriate section of the classified loss and gain statement.

Rent paid in advance.—If this item represents factory rent to the extent that it is not accrued it is not a cost to the manufactured product but an asset and should, therefore, not appear in the classified loss and gain statement.

Fuel, partly consumed and balance on hand.—The amount of fuel not yet consumed is an asset to the company and should not be represented in the costs for the period covered by the statement.

CHAPTER III

LABOR

40. *Element of factory cost.*—Primarily the elements of factory cost consist of material, labor, and burden. Labor is treated in this work in advance of the Chapter on "Material," and, perhaps, out of what is generally regarded as the logical order, for the reason that in the industrial works illustrated by the explanations, illustrations, and citations, much of the material that is used has previously had labor expended upon it, and for the additional reason that the subject of labor is first encountered in connection with the various leading factories illustrated, and material follows.

41. *Meaning of labor.*—Labor is divided by writers into various classes and grades, but for the purpose of this chapter it will be considered as being confined to services that are rendered in connection with manual employment in the works. The amount expended may be in connection with very numerous departments, purposes, or operations. It may be in aid of manufacturing processes directly designated as productive or it may be wholly or partly for building repairs, plant repairs, erection of plant, erection of buildings, sundry labor, boiler men, engine men and stokers, general utility men, etc., or for an infinite variety of subdivisions of non-productive work. The supervisor of labor, superintendent, or shop foreman especially employed for this purpose, should keep constantly available accurate records of all labor employed and, in connection

with this subject, there should be such a system embracing written directions, orders, and instructions as to make it impossible for misunderstandings to exist.

42. *Work orders.*—In the case of a manufacturer with a small business under the primitive conditions common to such industries, verbal orders and directions, particularly when the work is conducted under the immediate supervision of the proprietor, are adequate and satisfactory, but under modern circumstances difficulties following verbal communications have multiplied with great rapidity. The owner or manager of the works cannot constantly be present nor can he carry in his mind with precision the complete details of the work to be accomplished, involving as it often does combinations, intricate adjustments, and complex mechanical construction.

The capacity of the human mind is definitely limited, and especially with respect to matters of detail in connection with specifications of labor to be accomplished; as in a large number of orders with widely varying conditions, there should be required a proper and scientifically simple written record. Such records, it need hardly be observed, should be so clearly stated as to be easily understood and of the most definite character. The system should be so arranged and planned that the written communication or order form should be limited in its use to foremen, assistant foremen, or those in charge of the men performing the most common kind of manual labor, under whatever title is appropriate. It is in connection with the original order for work to be accomplished that we can expect to find a proper foundation and basis for entries in cost accounting systems. One of the principal difficulties to be encountered is to definitely place the responsibility for carry-

CHAPTER I

LABOR

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The ideal modern organization unceasingly attempts to develop effective policies in connection with the examination and analysis of labor detail. The workmen when practicable are given information on the work cards as to the labor to be undertaken, the location and composition of the material to be operated upon, the course to be followed, and details of a character to result in a definite understanding of their relations to the other factory processes.

44. *Determination of labor efficiency.*—The manager of the plant must determine from his system the universal question, continually reappearing, as to the relative efficiency of men. That universal cry for results from the exertion of not only human mind but human body appears at this stage of factory life in all its force. The term "labor" in this connection means nothing definite. It may describe a person of the greatest efficiency or of the greatest worthlessness. There is much need of a measure of worth, a measure of constancy, a measure of productivity, and every blank and every form and every index card, every summary, recapitulation, and analytical statement that may be devised has for its object the disclosure of relative efficiency and the disclosure of the disposition and the power of men to perform tasks. Every obstacle is placed in the way of a full, fair, and effective disclosure of these facts by those in the management or in the laboring force who expect to be affected adversely by such exposure, and still the contest goes on. On one side the motive is to disclose idleness, to locate adequate performance, to indicate fraud, to assign responsibility and detect inefficiency. On the other hand, there is a general indis-
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ing out the various work orders to be exec labor is often so lacking in appreciation bility and in the type of intelligence necess stand the most simple forms and blanks c that the orders must be construed by me advanced grade of perception and with a responsibility for the execution of the wor

43. *Problems of labor administration.*—I beginning of the industrial system to the every conceivable plan has been adopted countability for energy, and for the pro tion of labor expenditure. Much has be the subject and much has been solved, but lems of labor administration of to-day complicated in actual practice as heret has been in this matter in many estab much system with too little informatio frequently the largest item of expense with manufacture and its consideratio problem which most manufacturers ha with. It is not alone the problem of men on the lowest possible basis but to organize their forces in order to extract dividual the utmost possible amount o price paid. Waste, misdirected effort, tion resulting in enormous losses must and prevented. Delays are to be fo proper system of espionage, the purpos prevent the class of losses where the calc in the pay roll is based upon time formance.

Every cost accounting step which is i pages which follow is the result of a plans to increase productiveness and

and definitely gives the status of the men in connection with the work's operation.

46. *Method of distribution of labor.*—Of course, the method of distribution of labor depends upon the manner in which the cost accounts are kept. If the records are kept based upon order numbers, the labor is to be distributed upon cost sheets for each and every order number, and the proper cost accounting blanks should provide for the labor items in connection with each order as well as for those of unproductive labor upon final distribution of burden. If the cost accounting system is kept by departments, the distribution of pay roll should contemplate separation of the items of direct or productive labor for each department, properly grouped to show in connection with the analysis an intelligent summary of the results. When the cost system is kept according to processes or operations the distribution of the pay roll should conform to, and the cost sheet provide for, labor distribution from pay-roll sheets so that each operation will have included, with the items separated, the proper proportion of the labor taken from the analysis of the entire pay roll. When the cost system is based upon machines, as is sometimes the case, the cost sheet should show the element of labor which has to do with, and is created in connection with, machinery. Whatever the basis may be, whether based on order numbers, department operations, or machines, the vital thing is to have the distribution made as the result of careful analysis and sound discretion.

47. *Recording time.*—Mechanical devices, such as the clock records, are employed to assist in protecting the pay rolls made up at the end of the month or half-month from ina[illegible]lling from car[illegible]ness

and the negligence always to be considered in dealing with this subject-matter. An infinite variety of such mechanical devices are pressed upon the attention of the public and doubtless virtues exist in each. A student of this subject should carefully refrain from assuming that any particular system or set of devices will ever be universally satisfactory and must be continually on his guard to detect faults and apply remedies appropriate to the situation immediately confronting him.

Every successful plan of recording, distributing, and safeguarding the pay-roll account must be the result of the most careful study in advance of installation. In very large establishments methods are employed that would be entirely inappropriate in the case of less extensive operations. But there must be some record satisfactorily insuring the accuracy as to distribution of time expended in connection with every branch of manual labor. Possibly that distribution may be with reference to various operations or to departmental work. It is possible and frequently happens that for every hour of the work day of a laborer there may be different employment. The timekeeping department, aided by the mechanical devices, makes up the pay roll based upon the information contained in the records of the timekeepers. Emphasis must be laid upon the point that it is vital that the records for the pay roll should be protected in every conceivable way from the possibilities of error. An infinite variety of occupations may exist with extraordinary variations in rates of pay for each. Time is taken perhaps several times a day and at least twice. A mark is provided to be shown in an appropriate blank indicating the facts as to the presence or absence of the workman and, if present, indication as to his then occupation.

The descriptions and illustrations which are to follow in this chapter will show precisely the methods used in certain typical organizations for checking and filling out pay rolls from the data which the timekeepers procure in connection with every inspection which is made. Practically all of the situations amounting to scandals which have been disclosed indicating frauds and resulting losses in connection with labor cost in large factories have been traced to the failure of timekeepers, by reason of their negligence or fraud, to show accurately the facts which have been provided to be set forth on the blanks which are hereinafter illustrated. Much of the information has to be secured by the timekeepers from personal investigation and interviews with the workmen, and the record is afterwards compared to determine errors and check up regularity of work by interviews with others in the same group or department.

48. *Classification of labor.*—It has been suggested heretofore that a sharp line be drawn between the wages of men employed in direct productive work as distinguished from those employed for the benefit of the entire plant or for the general benefit of all operations on the entire output. Productive wages are, of course, definitely fixed as belonging to the prime cost of production of the particular article upon which labor is performed. In connection with the indirect or unproductive wages account there are great difficulties and many complex problems, which arise in regard to the distribution over the entire area of operations which receive a benefit in common.

Direct or productive labor is the subject of this chapter and indirect or unproductive labor expenditure will be covered in the Chapter on "Burden." It cannot be

too forcibly impressed upon the student of this subject that the greatest possible attention should be given to insure accuracy in compiling time sheets and in supervising and re-checking all the original entries based upon which the pay roll is made. Any portion of time of the laborer upon unproductive work should be indicated so clearly as not to result in misleading information and should be carried to a special account for more deliberate consideration, and for the re-distribution processes in connection with the general burden. As simple and elementary as the records are in connection with the general employment, assignment, and recording of labor transactions, it is here that the greatest looseness has been encountered. This is due to the indisposition on the part of supervisors, foremen, superintendents, and others in authority to take upon themselves responsibility for details, and the tendency to leave matters of such routine character entirely in the hands of those who may prove unworthy of confidence. In a great many establishments workmen themselves make their own reports under a system where no sufficient precautions have been taken to prevent fraud or errors.

49. *Pay-roll distribution.*—Having obtained the aggregate amount of the pay roll made up from an infinite number of items, showing names and occupations of men at various times and at varying rates of pay, and recording the every detail of service rendered, there comes the necessity of general pay-roll distribution. It is in connection with distribution that the greatest thoroughness and the soundest discretion should be exercised. The pay roll exhibits the name or number of each person employed, the rate of compensation, the amount of work executed, the nature thereof, and the total amount earned. The various plans based upon which the pay

roll is to be prepared depends somewhat upon the degree of honesty and intelligence each obtains in connection with the laborers employed.

In certain lines of occupation and manufacturing it has been observed that it is customary to rely very largely upon the reports made by the operatives themselves, and that these are sometimes prepared and placed on inspection, subject to examination by other employés of the same department, and this in itself constitutes to an extent a check upon accuracy. The managers of plants unfortunately are frequently afflicted with the variety of weakness and mental inertia which results in personal ignorance of precise labor conditions in the plant.

CHAPTER IV

LABOR: TIME-KEEPING AND WAGE SYSTEMS

50. *Work of labor department.*—All questions, problems and duties connected with the labor division of cost accounting are under the general supervision of what is known as the time-keeping department or labor department. This department may be divided into two sub-departments or bureaus; the employment bureau and the time-keeping department proper. The labor department employs and discharges the men, keeps accurate records and indexes and time-slips for all the men, makes out and enters up pay rolls and time sheets, makes up the pay checks, and usually distributes on the basis of the time-keeping records the labor performed to its proper accounts and job numbers. The employment bureau receives daily from the foremen of the different departments a statement showing the exact condition of labor for that day, enabling them to judge accurately just how much labor and of what kind is needed, and men are employed with this slip as a basis. When a man is employed, he is set to work in a number of different ways. For instance, in the Wisconsin Iron Products Company's plant, the man receives what is known as an "employment slip." (See Figure 1 on page 285.) This blank is given to him at the employment office and filled out there and the watchman takes him from the employment office to the nearest clock house. A number of these clock houses are

FIGURE 1

WISCONSIN IRON PRODUCTS CO.

DEPARTMENT OF LABOR

Date..................................191....

Pass..

To..Foreman

....Department

Employment Division

By......................

Started to Work..........Turn..................191....

Occupation..

Registry No............... Roll No....................

O. K..
Sup't Dept.

O. K..
Timekeeper

EMPLOYMENT SLIP

This slip is made up at the Employment Office and is given to the new employee, from whom it is taken by the Timekeeper on his first round and sent to the Addressograph.

scattered through the grounds for the purpose of recording the time of employés. A clock card (see Figure 2, page 287) made up from the employment slip contains the employé's name, register number, and department. The man's time begins when he rings in at the clock house daily and is recorded on this slip. The employé is then taken to his department and set to work. When the timekeeper goes on his first round thereafter, he takes up this employment ticket and substitutes for it a brass badge containing the employé's pay roll number. The timekeeper reports at the clock house the pay roll number he has given the man when he returns from his round. Then the clock card is taken to the time office and the man's name is set up in the addressograph. No name can be set up on this addressograph without the authority of the employment slip which is received at the time office, together with the clock card. A duplicate [illegible] the employment slip is sent to the employment office [illegible] complete the card record which is kept of the em- [illegible]. This number, which is given to the employé [illegible] timekeeper, remains the same as long as he is [illegible] by the corporation. The addressograph re- [illegible] after being "set up" with the employment slip [illegible] foundation, is in itself authority for issuing all [illegible] pay rolls, etc.

[illegible] Manufacturing Company a slightly dif- [illegible] is followed. The man desiring work goes [illegible] employment office and if employed is given a [illegible]. This slip is given to the timekeeper, who [illegible] to a locker in the locker room, instructs [illegible] of the recording time clock, and [illegible] foreman of the proper department. [illegible] much simpler than the one in use by [illegible] Iron Products Company, due to the

FIGURE 2

DATE	DAY IN	DAY OUT	NIGHT IN	NIGHT OUT	
1-16					
2-17					
3-18					
4-19					
5-20					
6-21					
7-22					
8-23					
9-24					
10-25					
11-26					
12-27					
13-28					
14-29					
15-30					
31					

732-1

TIME CLOCK RECORD

WISCONSIN IRON PRODUCTS CO.

CLOCK CARD

This clock card is made up from employment slip (Figure 1) and contains the employee's name, register number and department. This clock card serves to protect the payrolls at the end of the month.

smaller size of the factory. An almost identical system is followed in the A & B Manufacturing plant.

51. *Time-keeping department.*—The time-keeping department is a far more important one than the employment bureau. This department is responsible for the regulation of a large number of men. The time of these men must be accurately taken and the way in which that time is expended must also be exactly known and definitely recorded. In comparison with the difficulties of time-keeping, the handling of material which will be treated of later will seem very simple. Usually it is the duty of the timekeeper to have charge of the time clock, to make up such distributions and pay rolls, and oftentimes, pay checks, and report to employment bureau; to make rounds through the several departments twice or oftener in a single day, to adjust the various rates of pay which are used for different classes of work; to make accurate note on the record the different occupations which a single man may have had in one day and the varying rates of pay for each occupation.

52. *The pay roll.*—A good example of the duties of the time-keeping department can be seen in the Wisconsin Iron Products Company (see Figure 3, pages 290–1) is the pay roll and the foundation of all the distribution sheets, at the same time being authority for issuing pay checks. It is a loose leaf book carried by the timekeeper as he goes on his daily rounds. There is a similar one for the night timekeeper, as in this plant the work goes on continually. The timekeeper "checks" his men twice a day, once in the forenoon and once in the afternoon. On this pay-roll sheet appears a column for the name of the employé, and adjacent thereto, one for his number. The names are arranged

in order of pay-roll numbers and for each man a space is given which can allow for four, eight, or twelve different occupations. This is very necessary, since for this corporation it is quite customary for a man to work at several different occupations in the same day.

At the beginning of the month the men's names and numbers are printed on this pay-roll sheet from the addressograph. The department to which the pay roll belongs and the date for the ending of the half month are given at the head of the sheet. These leaves are then bound in the loose leaf book and given to the timekeeper.

The timekeepers have a system of checking which they use in filling out the pay rolls and a key to this system is shown in Figure 3. These checks show an hourly day rate, an hourly night rate, a twelve-hour day turn, a similar night turn, fractions of a turn for both day and night, tonnage for day and night, and a twenty-four hour turn. All these variations may occur. As the timekeeper goes through his department and interviews each man, he finds out from him exactly what he has been doing for that day and checks his answer in the proper column; the same procedure with the next man, and so on through the list.

At the end of the half month a total is taken for each horizontal occupation column. This total is merely a figure or figures and the units are determined by what the unit of payment is for that occupation.

Thus, in Figure 3, John Smith, No. 5460, who had been working as a cinder snapper, and who worked only seven days (on the fifth day working for twenty-four hours), we find in the total column, figure 8. This "8," as we see by consulting the key at the bottom of the figure, refers to eight twelve-hour turns. Follow-

351A 10M-11-09

FIGURE

Time Ext. and Fig.__________

Ext. Checked__________

Re-Ext. and Re-Fig.__________

WISCONSIN IRON

PAY

__________Department

Name Number	Occupation	1	2	3	4	5	6	7	8	9	10	11	12

PRODUCTS COMPANY

ROLL

FIRST HALF, MOMTH OF____________________1910

13	14	15		Total	Rate	Earnings	DEDUCTIONS		Net	Paid	
							Items	Amount			

ing the total column is the rate column, showing the rate of payment per unit of labor. Next is the earnings column, product of the total by the rate. The deduction column follows and this is used merely for inserting the total amount of final payment when an employé leaves before the end of the half month. The total of this column is useful for determining how much money must be on hand at the end of the half month for paying off purposes.

The next name is Frank Smith, pay roll No. 5461, who has been working for twelve twelve-hour turns as a laborer. His rate is $2 a turn, but since he is not paid until the end of the half month the total earnings are put in the net column instead of the deductions column.

The next man, Joseph Thomas, No. 5462, has had three occupations since the beginning of the half month. He started working on the day tonnage scale on the first of the month; from the second to the fourth he worked as a laborer, on twelve-hour turns; the fifth and sixth as a cinder snapper; and so on through the half month as can be seen in Figure 3. His total for the three different occupations is put in the total column, and the rate for each occupation is put in the rate column following the total, and the earnings column is next. Here we have the interesting situation in cost keeping of one man being paid at the end of the half month, partly by day tonnage, partly by day turn at one rate, and partly by another.

At the end of the half month the book is turned in and a new one given to the timekeeper. This book goes to the paymaster where the pay checks are made out, the men being paid twice a month at these works.

53. *The force report.*—From the pay roll is made out

a number of other blanks. On the timekeeper's first trip in the morning he makes out a force report. (See Figure 4, pages 293–4.) This force report (Figure 4) shows the exact condition of labor for each day in the half month and there is one made out for each department in the mill. This report is more a matter of interest to the administrative head of the works and to the employment bureau than to the cost accountant, but it actually is the first distribution which is made from the original entry in the pay roll by the timekeeper. These sheets are made out at the beginning of the month, a sheet or set of sheets for each department and the occupation column is also filled out in advance, and in the standard column is put the standard number of employés, both for the day and night, which it is customary to have on duty. The timekeeper merely has to put in the proper figures in the columns following.

54. *Recapitulation.*—Statistical reports are made up from this sheet, also a report known as the recapitulation, invariably designated recap in cost accounting departments. (See Figure 5, page 296.) This recap is a small sheet showing the exact condition of labor in an abbreviated form for any department during the day.

Referring to the figure we see that there are five columns, the first four being a subdivision of labor into its various kinds of payment. Extending horizontally are two columns, one called the "day turn" and the other the "night turn." In the column headed "salary" in the line with the column headed "day turn" is inserted the number of men paid a salary to work during the day turn, and below it the number of salaried men working during the night turn. The same for tonnage men, day men, and construction men. There are two

Figure 5

WISCONSIN IRON PRODUCTS COMPANY

Force Report.. *Dept*...191......

	Salaried	Tonnage	Day Men	Construction	Total
Day Turn					
Night Turn					
Grand Total					

RECAPITULATION SHEET

This recapitulation is made out by the timekeeper after his afternoon trip, showing the condition of labor in each department for each day. This recapitulation is made up from the force report.

total columns, and by means of those shown on the right hand side the superintendent can see at a glance the total number of day men and the total number of night men, and by referring to the totals at the bottom, the number of salaried men, tonnage men, day men, and construction men employed during the twenty-four hours. In the lower right hand square appears the total number of men employed during the twenty-four hour period.

55. *Who may make out the pay roll.*—In the C Manufacturing Company the pay roll is made out in the offices, and the timekeeper's duties consist merely in having charge of the registering of the employés on the clock card. All the data as to time employed on each piece of work and the amount of pay for that time is taken from the job card which is given to the workman with each job. (See Figures 6 and 6A, on pages 298 and 299.)

A card of this kind is filled out by the workman with his name, the order number on which he is working and some other miscellaneous data as shown in the figure, and the number of quarter hours allowed for doing this piece of work.

56. *Wage systems.*—The C Manufacturing Company pays its men by the premium system and they are allowed a certain amount of time for each job. If the workman finishes in less time than that allowed he gets half of all that he saves. By means of a machine which registers on the stroke of a crank, the total number of quarter hours elapsed since the beginning of the month are printed in the spaces in the horizontal columns entitled "start" and "stop." The time clerk, when he receives these cards, figures up the number of quarter hours elapsed since the card went out and this amount

FIGURE 6

D. C. No. & NAME ORD.

ORDER NO..

SYM............ Pc. No..................... CARD No..........

No. Pcs........................ OPER..................

DIV.	TIME EACH	Q. HRS. ALLOWED

STOP	NET Q. HRS.
START	
STOP	
START	
STOP	
START	
STOP	
START	

1. Cutting off.
2. Blacksmith.
3. Planer.
4. Keyseating.
5. Turret Lathe.
6. Engine Lathe.
7. Screw Machine.
8. Auto. Sc. Mach.
9. Case Hardening.
10. Polishing.
11. Milling.
12. Gear Cutting.
13. Drilling.
14. Horizontal Mill.
15. Vertical Mill.
16. Grinding.
17. Spec. Tool.
18. Tool Room.

Bench Work.

TOTAL Q. HRS.	
COST LABOR	
STOPPED	COMPLETED

KEEP THIS CARD CLEAN

PUT IN DEPT. RACK AT NOON AND NIGHT

NEXT JOB

Order No..................................

Sym...... Pc. No............ Card No..........

No. Pcs............ Oper...................

JOB CARD

FIGURE 6A

D. C.	No. & NAME	ORD.

ORDER NO.	A. Chuck. B. Carriage. C. Turret. D. E. Feed Box. F. Power Mover.
	G. Bed. H. Headstock. I. Motor Drive. J. Countershaft.
STOP NET Q. HRS. START	K. Painting. L. Testing. M. Upright. N. Table and Sp.
STOP START	O. Top Rail. P. Cross Rail. Q. Cross Head. R. Lower Fd. Br.
STOP START	S. Cr. Rail Fd. Br. T. Quick Trav. U. Elev. Bracket. V. Turret Heads.
STOP START	W. Gen. Erecting. X. Oil Pan & Pump. Y. Chg. after Test.

Always write NEXT JOB In space below	TOTAL Q. HRS.	KEEP THIS CARD CLEAN
	COST LABOR	
ORDER NO.	DIVISION	PUT IN CARD RACK AT NOON AND NIGHT
....	....	
....	....	
....	....	
....	....	

JOB CARD

is put in the same row with the printed figures. Then the number of quarter hours is totalled, and by means of computing machines the cost of labor is ascertained and placed directly beneath the total. It is from this card, rather than from a timekeeper's report, that the distributions are made by the cost department of the C Manufacturing Company. The clock card is checked at the end of the month with the job tickets, thus preventing any padding of the pay roll.

This matter of anticipating possible manipulation of the pay roll is of the greatest importance. The foreman's books should be checked with the pay roll as to time and amount charged for piece work, the calculating should be verified with the footings of the pay roll, and it should be determined that the total agrees with the amount represented by the check drawn for wages. Fraud in payment of wages is hard to detect, but it may be largely prevented by proper precaution.

The West Milwaukee shops of the Chicago, Milwaukee and St. Paul Railway depend entirely upon reports from the foreman, and these reports come in once a day,

FIGURE 7

CHICAGO, MILWAUKEE & ST. PAUL RAILWAY

....191...

KIND OF CAR	NO. OF CAR OR ENGINE	NO. OF HOURS	AMOUNT AND CLASS OF WORK
....	....	....	....
....	....	....	....
....	....	....	....

Sig..

TIME SLIP

This is the slip on which the employees report their time and the distribution of it daily. It goes to the time office, and it is from this slip that they make up their records.

showing the employé's name, the different occupations in which he has been engaged during the day and the number of hours for each one of those occupations.

57. *The labor ledger.*—(See Figure 7 shown on page 300.) When this slip is brought to the time office it is entered up in the labor ledger as shown in Figure 8, and has very nearly the same form as the pay-roll sheet used by the Wisconsin Iron Products Company. (See Figure 8, on page 302.) There being one sheet to each employé for a month, the left-hand column is for occupation, showing the different pieces of work upon which the employé has been engaged during that month. There is a line of "date columns," thirty-one in number, and in these date columns, and in line with whatever piece of work the man has been engaged on for any particular day, is put the number of hours that he was engaged in that work. The man is supposed to put in ten hours a day, payment being almost entirely by the day. Hours and pay are totalled on the extreme right and the grand total made at the lower right-hand corner. From this work ledger the shop labor is distributed in another book to the various account numbers, and from this last book reports are made up for the office.

This is practically all the duties of the time-keeping office, making one of the simplest time-keeping arrangements known. The A & B Manufacturng Company pay their men by piece-work and hour. The time is taken by clock and records kept on clock cards. (See Figure 9, page 303.) The hours from the time clock are put in the column called "clock hours," and at the end of the half month the work tickets are posted in the columns called job ticket record, thus forming a parallel

FIGURE 9

Name...John Smith Occupation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	[illegible]	[illegible]	[illegible]	[illegible]
Observation Car "Algonquin"	10	6	2	5	10	5	10	0	7	2	10	10	10	5	5	6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
Box Car No. 8420	0	0	0	0	0	5	0	0	4	4	0	0	0	5	0	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
Repairing Box Car No. 7002..	0	4	8	5	0	0	0	0	0	4	0	0	0	0	5	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
Passenger Coach No. 5030...	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total	10	10	0	10	10	0	10	0	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	310		80	00

LABOR LEDGER

This is the first book on which the labor slips are entered as they are brought in. There is one sheet in this book for each man. It almost corresponds to the payroll used in the Wisconsin Iron Products Company and has a great deal the same form.

FIGURE 9

Half Month Beginning

No.................... ....

NAME..

Day	Clock Hours	Job Ticket Record (Piece Work Entered in Red)					
1-16							
2-17							
3-18							
4-19							
5-20							
6-21							
7-22							
8-23							
9-24							
10-25							
11-23							
12-27							
13-28							
14-29							
15-30							
31							

Total Hours	Wages D. R.	Total Q. Hrs.
Rate		Amt. Pay

CLOCK CARD

between the two records. Any discrepancies in time can be noted at a glance with this system. The other side of the clock card is used for the other half of the month, making one clock card for a man per month.

The A & B Manufacturing Company makes agricultural implements and their methods are necessarily somewhat different from those of the C Manufacturing Company. The implement manufacturer requires a large number of small rough made pieces, which can be made in lots of a hundred or a thousand, and regarding which there is no need of such accuracy, but the C Manufacturing Company, making high class lathes, boring mills, etc., make a comparatively small number of large size, highly accurate, and very valuable tool steel pieces.

58. *Other methods of recording labor.*—It can be easily seen that methods applied to one organization may be totally inapplicable to another. The work card which is given to a workman at the A & B plant is a rather complicated slip. The card itself is in duplicate, one blue and one white. (See Figure 10, page 305.) The white one remains in the office, the blue one in the shop, and the work card is used over and over again. A small sketch is made at the top of the work card and the symbol, name, and size given. Below are inserted the department, operation, description, machine, location of operator, and piece work price. These columns are filled in before a card is given out to an operator. Enclosing this blue card is a slip of paper which is so perforated as to be detachable in two portions, which we will call A and B respectively. This slip is shown in Figure 11, page 306. The detachable portion is the material report and will be considered in the chapter on "Material." The other slip, which remains fastened to the card, is called the memorandum slip, showing the

Figure 10

SKETCH	Symbol
	Name
	Size

Dept.	Operation	Description of Operation	Loca. of Oper.	Price	Die Setting A	Die Setting B	Die Setting C
......	....	....	.....	......	...	...	...
......	....	....	.....	......	...	...	...
......	....	....	.....	......	...	...	...
......	....	....	.....	......	...	...	...
......	....	....	.....	......	...	...	...
......	....	....	.....	......	...	...	...
......	....	....	.....	......	...	...	...
......	....	....	.....	......	...	...	...
......	....	....	.....	......	...	...	...
......	....	....	.....	......	...	...	...
......	....	....	.....	......	...	...	...
......	....	....	.....	......	...	...	...
......	....	....	.....	......	...	...	...
......	....	....	.....	......	...	...	...
......	....	....	.....	......	...	...	...

WORK CARD

These cards are the same in every way except for color. The white stays in the office and the blue in the shop. They show the department, description, location of operator and piece-work price for each operation relating thereto. The blue card along with blanks in Figure 11 goes to the operator. These blue cards are kept on file in the shops and are used in connection with the bin.

FIGURE 11

ORDER No.	ISSUED 19
No. Pcs. REQ'D	SYMBOL

Received		Record of Partial Deliveries	Date Completed
By Dept.	Date		
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....

Fold

RETURN THIS CARD AND SLIP TO SUPT.'S OFFICE AS SOON AS LAST OPERATION IS COMPLETED

Deliver material called for below, attach tag to stock, and enter weight. *Return stub to Supt.'s Office on date of delivery.*

Ord. No.................... Symbol..................

Length Bar................ Size.....................

Pcs. in Bar................ Length Pc...............

Material................... Weight..................

Pieces...

Location Wanted............ Date Delivered..........

MEMO SLIP

This memo slip is to be returned to the Superintendent's Office when the job is finished. The material slip is the detachable part of the memo slip and it specifies the material needed and is detached and returned to the Superintendent's Office when the material is delivered.

date of receipt of a partially filled order by each department, a record of partial delivery, and a place to show the date when the order is completed. When the job is finished this memorandum slip is returned to the superintendent's office. There is also another card which accompanies the job which very much resembles the card used in the C Manufacturing Company. There are three of these cards, all different in color (see Figure 12, page 308), each one being for a different class of labor. The blue card for productive labor, yellow for productive piece-work and brown for non-productive day work.

Most of the labor employed is piece work labor. A ledger card is kept which will be considered later under the subject of distribution. On these cards the labor record, which is rather interesting, is kept. There are six blank spaces on this card allowing for record of six complete operations. The departments in which the labor was done are indicated and a description of the operation. After showing the check numbers, date, order number, and quantities, there appears the number of hours of employment taken direct from the work card in Figure 12. The piece work rate is shown immediately following. Then follows the total cost of the operation if it has been done by means of the day work rate, and the actual cost if it was done by piece work rate, affording a most valuable comparison between the day and piece work prices for goods.

59. *Recording distribution of labor.*—From the original data, whether it be a pay roll, as in the Wisconsin Iron Products Company, or a job card, are compiled the different labor distribution sheets. The general principle of a labor distribution sheet is to divide the total labor cost in such a way as to give each account

Figure 12

D. C. MAN'S No. & NAME ORD.

ORDER NO..

SYMBOL.................................LOT No............

No. PCS...................... OPER.......................

BUNDLE		DEPARTMENTS
P. W. RATE		1. Punch Room 2. Blacksmith 3. Machine Shop 4. Grinding Room 5. Yard 6. Wood Shop 7. Erecting Room 8. Paint Shop 9. Bundling Room 10. Shipping Dept. 11. Pattern Shop 12. Lumber Storage 13. Steel Storage 14. Casting Storage 15. Store Room 16. Supt. Office 17. Expintl. Dept. 18. Power Dept. 19. Inspection Dept. 20. Extra Dept.
STOP START	NET Q. HRS.	
STOP START		
STOP START		
STOP START		

D. W. RATE	TOTAL Q. HRS.		KEEP THIS CARD CLEAN
D. RATE EARNED	COST LABOR		PUT IN CARD RACK AT NOON AND NIGHT
SHOP EXP.	STOPPED	COMPLETED	

Change Job Ticket before starting on new job.
Present tag attached to work to time clerk or write next job on back of this card.
A. & B. MFG. CO., AGRIC. DEPT.

O. K..

WORK CARDS IN THREE COLORS

These blanks are known as the work cards, and they show the time the employee is engaged in labor by one-quarter hours, his name and the order number. One of these cards goes with each new job. The difference in color is to facilitate three classes of labor recognized at these works. The time shown on these cards is posted to the time cards.

or order number its proper items. For instance, in the Wisconsin Iron Products Company we have a labor distribution, so-called. (See Figure 13, page 310.) This record is made up on a pay-roll blank and distributes all the labor for the half month by days to the proper account number. The occupations are put in the left-hand column where "name" should go. In the occupation column is put alternately "day" and "night," distributing the work into day and night sections. Since there is a differential rate for day and night work, the rate for each occupation is put as shown in the rate column, and in the one headed items under the grand head of deductions are put the account numbers in order. These account numbers are taken from a pamphlet called the card of accounts. This card of accounts, a sample page of which is shown in Figure 14, contains some thirteen thousand main accounts with a number of sub-accounts denoted by the letters of the alphabet. Thus, for instance, is shown a page of the card of accounts No. I. rail mill. Down at the bottom of the page is account 610, which is headed "tools and miscellaneous accounts," and sub-account B is "tools" (including labor in making, repairing, and maintaining). Then, looking at the labor distribution we see drill grinder in account 610B; drill grinding will come under making, repairing, and maintaining tools. "Tool men" comes under this same head. In this way the entire labor distribution is made by the timekeepers daily record from the pay roll and from the distribution of yard time.

60. *Making up the labor voucher.*—It is from this data that the labor voucher is made up, and from the labor voucher the labor items on the journal vouchers. These journal vouchers will be considered at length under the subject of materials and the final cost sheet of exhibits,

FIGURE 13

WISCONSIN IRON PRODUCTS COMPANY

Time Ext. and Fig.............

Ext. Checked.................

Re-Ext. and Re-Fig............ ....*Department.* *For half month ending*............ 191....

Name	Number	Occupation	1 16	2 17	3 18	4 19	5 20	6 21	7 22	8 23	9 24	10 25	11 26	12 27	13 28	14 29	15 30	 31	Total	Rate	Earnings	DEDUCTIONS Items	 Amount	Net	Paid

LABOR DISTRIBUTION

This is a 15-day sheet, made up by the timekeeper, distributing all labor for the half month into the various account numbers. distribution is compiled from the payroll and the distribution of yard time. It is from this that the labor voucher is made up.

FIGURE 14.

NO. 1, RAIL MILL.

605. LABOR IN REPAIRS—Continued.

- n. Air compressor, pneumatic machinery and connections.
- o. Electric motors and connections.
- p. Scales (including inspection).
- r. All other machinery and appliances.

606. LABOR IN MAINTENANCE.

- a. Buildings and roofs.
- b. Yards, fences, roadways, sidewalks, sewers and gas mains.
- c. Trestles, tracks, track scales, subways and viaducts.
- d. Fire protection (includes wages of men while serving in Fire Department).

607. MATERIAL IN REPAIRS.

- a. Engines and connections (including material in repairs to condenser plant).
- b. Heating furnaces and soaking pits.
- c. Charging and drawing cranes and machinery.
- d. Roll trains and tables.
- e. Ingot buggies, transfer cars and locomotives.
- f. Hydraulic machinery and connections (except charging and drawing machinery).
- g. Hot saws, saw tables and hot beds.
- h. Cammer and connections.
- i. Straightening presses, rollers and stands.
- k. Drill presses and chipping beds.
- l. Rail and scrap conveyors.
- m. Cold saw and cold saw tables.
- n. Air compressor, pneumatic machinery and connections.
- o. Electric motors and connections.
- p. Scales.
- r. All other machinery and appliances.

608. MATERIAL IN MAINTENANCE.

- a. Buildings and roofs.
- b. Yards, fences, roadways, sidewalks, sewers and gas mains.
- c. Trestles, tracks, track scales, subways and viaducts.
- d. Fire protection (includes all appliances).

609. LUBRICANTS.

610. TOOLS AND MISCELLANEOUS SUPPLIES.

- a. Waste, packing and miscellaneous supplies.
- b. Tools (including labor, making, repairing and maintaining).

CARD OF ACCOUNTS.

...mpany's system pro-
...department shall hand
... Figure 18, page 316)
...e day to the proper ac-
...hours, rate and amount
...e distribution sheet for
...ment.

...another distribution of
..., except that it is shown
...s the total work of the
...different account num-
....)

...mpany has a detailed cost
...319.) This sheet can be
...h considered separately.
...at the first heavy black
...tion and detailed cost."
... that heading providing
... through nine different
... it. For small, special,
...should be kept instead
... shows practically the
...form. At the top of the

FIGURE 15

WISCONSIN IRON PRODUCTS COMPANY

YARD DEPT.

Sheet No.................

Foreman No............... *Date*...........................191...

Pay No.	No. Hrs.	Pay No.	No. Hrs.	Cars Loaded or Unloaded						Division of Contract Time		
				Initial	Number	Contents	Kind	Place	Weight		Rate	Amount
										Tons		
										Tons		
										Yards		

CORRECT *Time*...........*M.* ....*Timekeeper*

Men Loaned.........................*Dept.*

Received above men...................*Foreman*

DISTRIBUTION OF YARD TIME

This blank, which shows the time taken in unloading cars, combined with Figure 16, which shows the distribution of the time of stocking cupola from the cars and furnaces, are used to make up the daily distribution sheets shown on Figure 17. There is one of these 17 sheets for each department in the works.

FIGURE 16

WISCONSIN IRON PRODUCTS COMPANY

Account No.........

DISTRIBUTION OF YARD TIME

Date..........................191......

DESCRIPTION OF WORK	DEPARTMENT	Hours Tons Yards	RATE	AMOUNT	

YARD TIME DISTRIBUTION

This is the slip which distributes the yard time. From this slip is made up the daily shop distribution, Figure 17.

Figure 17

WISCONSIN IRON PRODUCTS COMPANY

Daily Shop Distribution

Work done for Department Date 191

DESCRIPTION OF WORK	SHOP	ORDER NO.	AMOUNT	Check Mark	ACCT. NO.

DAILY SHOP DISTRIBUTION

This sheet is made out in duplicate, the original going to the manager of the Works and the carbon going to the superintendent of the department, each day. This gives the department superintendent a chance to check and verify the sheets the day following which the work was done. This sheet is made up of the blanks shown in Figures 15 and 16.

Figure 18

Distribution of Time

....................COAL, IRON AND RAILROAD COMPANY

......................Works

......................Dept. Date................191...

Name...................... No........

Helper..................... No........ Turn.....................

Description of Work	Dept.	Acct. No.	Occupation	Hrs.	Rate	Amount	
....	......	......	....	......	......	......	......
....	......	......	....	......	......	......	......
....	......	......	....	......	......	......	......
....	......	......	....	......	......	......	......
....	......	......	....	......	......	......	......
....	......	......	....	......	......	......	......

Correct..................................

Foreman

WORK SLIP

Figure 19

....................COAL, IRON AND RAILROAD COMPANY

Distribution of Time

Date.............................191...

........................*Dept.*

Turn........................

No.	Name and Description of Work	Dept.	Acct. No.	Occupation	Hrs.	Rate	Amount	
	....	......	......	....	......	......	......	.....
	....	......	......	....	......	......	......	.....
	....	......	......	....	......	......	......	.....
	....	......	......	....	......	......	......	.....
	....	......	......	....	......	......	......	.....
	....	......	......	....	......	......	......	.....
	....	......	......	....	......	......	......	.....
	....	......	......	....	......	......	......	.....
	....	......	......	....	......	......	......	.....

[illegible] O. K.

....

Foreman

TIME DISTRIBUTION SHEET

This sheet distributes the total work in a department in a day to the different account numbers.

the movement of orders, by merely opening his card index, can tell by this graphical arrangement of markers just what the exact condition of any order is and just what departments are behind in putting that order through. When the job is finally completed, all the markers will be in a vertical line and all of them over the finishing department. When this occurs the shop pusher takes out the cards from his file and enters them on his register.

Figur

NAME OF PIECE

INSPECTIONS AND DETAIL COSTS

DETAILED COST SHEET

This sheet is filled out from the inspector's daily report, and he can, from this sheet, determine at any time the comparative cost of different orders for the same piece. The labor costs are entered up on this sheet from the daily work tickets. The right-hand side of the sheet is merely a store room record. The collection of these sheets made up into a book is in the possession of an

	Avg. Wgt.	Kind Material	Avg. Cost	Store Room Location		Symbol		Pc. No.	
	Total Cost		Orde & Card	Appropriated		Store Room Record			
				Order	Pcs.	Date	Order or Card	Pcs.	No. in Stores
). K. & Sp. ept. r.	Lbs. Labor Sh. Exp. Total One Pc.	$	Order No. W-Y-R-B Card No. Start Req'd.						
). K. & Sp. ept. r.	Labor Sh. Exp. Total One Pc.		Order No. W-Y-R-B Card No. Start Req'd						
). K. & Sp. ept. :.	Labor Sh. Exp. Total One Pc.		Order No. W-Y-R-B Card No. Start Req'd						
). K. & Sp. ept. .	Labor Sh. Exp. Total One Pc.		Order No. W-Y-R-B Card No. Start Req'd						
). K. & Sp. ept. :.	Labor Sh. Exp. Total One Pc.		Order No. W-Y-R-B Card No. Start Req'd						
). K. & Sp. ept. r.	Labor Sh. Exp. Total One Pc.		Order No. W-Y-R-B Card No. Start Req'd						

official called the shop pusher, whose duty it is to see that all work is completed at the time set. It will be observed that there is space on this sheet for six different order numbers, so by turning to this record the shop pusher can see just how many orders of this work there are being worked on in the shop, what the store room record for that piece is and what the total cost of previous articles on that piece have been.

CHAPTER V

MATERIAL

61. *Material in general.*—Material should be strictly differentiated from supplies, the former being the term employed when the property enters directly into manufacture and the finished product; and the latter when indirectly employed. Logically, as heretofore explained, the subject of material should be considered before that of labor, and is so treated by most text writers; but the study of the employment and assignment of labor in connection with the operations of the industries herein considered naturally precedes the treatment of material. The reader should keep in mind the various kinds of cost records already described, represented by order numbers, by departments, by operations, and by machines. As material is purchased that account is debited and cash (or accounts payable) credited when the transfer occurs. While material remains in the stores department or in the custody, actual or constructive, of some authorized person representing the stores department, it is an asset and the inventory shows its value as personal property. When some authorized officer or responsible head of a department draws out material for manufacturing uses, the stores account is credited and the departments, representing the "goods in process" are debited. The subject of material and the care and responsibility involved in its safe-keeping and issuance is scarcely less important than the one dealing with labor. In many large works

it is the predominating factor and leads the trio of prime costs in the amount of value and responsibility involved, and deserves the utmost consideration by the investigator.

62. *Material as an adjunct to "work in process."*—Material is said to be united with labor and expense in the course of "work in process" to result ultimately in the production of the manufactured article. The manufacturer may be considered as having made an investment in material, in labor and in expense; the material to become subservient to labor, which in turn operates upon and changes the form of the material. These two united items, plus the direct expense, the burden (to be hereinafter considered), make up the total cost of the merchantable product. Material is said to be delivered to the work in process by its issuance from the market or storeroom to the individual or department authorized to receive it, where it is placed in the way of being converted into another form of value.

63. *Material account treatment.*—The treatment of material should be planned in conformance with the general principles laid down, but a specific plan should never be adopted except in view of the special needs and peculiarities of the business, and only after sufficient time has been given to the study of the conditions. The material account in the hands of the custodian of materials should, as stated, be carried in the ledger as an asset. When issued to the department making a requisition, it should be credited to material shown in the ledger account as a debit to "work in process." This material is as valuable or even more so, if the operations are wisely carried on, in its changed situation than before the other elements are mingled with it. That is, when work has been applied to it, when other value

has been placed upon it, and when experimental operations have been tried upon it. Waste sometimes results, but in the aggregate the total value of the material presents, when the various elements of prime cost are united, a much more valuable product than was the material as issued before such modification. It is important that material should be subdivided into as many accounts as will be desirable in view of its character and the demands of the plant. In the forms (which follow) all transactions affect treatment of material in connection with three or four leading industries of varied character.

64. *Material for repairs.*—Material can be divided into two classes and this is done in a great many factories. These are: Materials for repairs, of which a great amount is used for this purpose only; and materials for production. Frequently an entirely separate system of cost accounting is appropriate to this repairs material. In the Wisconsin Iron Products Company plant, for example, the cost accounting system and storeroom system for handling material for repairs is much more complex than that for the handling of material intended for production. The reason is, undoubtedly, that in works of this character repairs are being continually made to the furnaces, converters, railway machinery, engines, ore conveyors, and all the complex machinery which is used around such a plant. The furnaces must be re-lined every so often; the tuyeres must be replaced by new ones at short intervals, and there is such a multiplicity of repair items that the material therefor almost overshadows in importance what is actually used for production purposes. Smaller plants engaged in the manufacturing business, or any industry in which the subject of repairs is not a large

item, do not separate material into these two groups. They handle all of it through what is known as the storeroom department. This department, whose head is called the general storekeeper, is engaged in what is considered as buying material from the purchasing department and selling it to the various divisions of the factory or plant at cost.

Any material needed in the plant is requisitioned from the store department, by the authorized person or department desiring it, by means of an order. The storekeeper is supposed to see that there is an adequate amount of required stores on hand at all times. If the material desired is in the storeroom, it is issued on this order, which is then sent into the accounting department, where the stores are credited and the department receiving the material, debited. When the storekeeper finds that he is falling short of any standard article, he issues a requisition on the purchasing agent, who secures the materials desired from some outside source and sends a copy of the order issued and of the invoice, when it arrives, to the storekeeper for his information and record. When the material is received, quantity, quality, and price are checked with the original requisition and the invoice. If these are found to agree the invoice is passed to the general offices from where it is vouchered and paid. Part of the duties of the storekeeper is to keep a perpetual inventory, several systems of which will be explained later, and from that inventory to see that a sufficient and complete line of materials and supplies is kept on hand. There are any number of minor variations from this outline of the storekeeper's department.

65. *Division of store department supplies.*—The Wisconsin Iron Products Company is one of those cor-

porations dividing their store department supplies into material for repairs and material for production. The superintendent of each department when material is needed sends in what is known as a store ticket. (See Figure 21, page 325.) This is a requisition on the storekeeper to deliver certain goods named to the proper department. It will be noted that proper spaces are made on this ticket for the insertion of a statement showing where the material is to be used. This is important, for it is from this ticket that the clerks are able to charge the goods to the proper account number. A complete description of the goods desired must be given. After this ticket is duly recorded in the storeroom it is sent to the price clerk, who inserts the proper price for each article desired. At the end of the day all store tickets are sorted, first according to departments and then by account numbers. If the material is not in stock, however, the storekeeper issues a requisition therefor on the purchasing agent. The purchasing agent then buys the articles desired, and sends the invoice to the cost department where it is entered on the invoice register. (Figure 22, pages 326–327.) The invoice register is used in connection with a card system. Invoices are posted from the invoice register in the order of their receipt. They are sorted in the card index, alphabetically by shippers' names. When the goods are received and checked the freight and deductions are entered on the invoice register and the invoice is put in line for passage by being entered on the invoice list, which goes to the general office voucher department. (See Figure 23, page 328.)

66. *Material intended for stock.*—If the material ordered by the storekeeper from the purchasing

FIGURE 21

WISCONSIN IRON PRODUCTS CO................Works.................191.... Shop Order No.......................

STOREKEEPER: Please deliver the following material for.......................... Dept. } Charge to

Show just where material is used.. } Repair Account No.................

No.	DESCRIPTION	Quantity Delivered	Price	Amount
....	....	....	....	....
....	....	....	....	....
....	....	....	....	....
	TOTAL			

....

Supt. or Foreman

STORE TICKET

This ticket is made out by the superintendent or foreman and is a requisition on the storekeeper to deliver certain goods for repairs to the department. A complete description of the goods desired and for what purpose they are to be used is inserted on the card. This enables the clerk to insert the proper account number. This store ticket, after going through the store room, goes to the price clerk, who inserts the price. Then all tickets for one day are sorted according to departments and account numbers.

FIGURE

WISCONSIN IRON

REGISTER OF

Shipper	Material	F. O. B. Point	Price

...NVOICE REGISTER

... with the card index, which is arranged ... shippers' names. Invoices are entered on this

PRODUCTS COMPANY

INVOICES RECEIVED

Extension	Amount	Ex. Bill and Vou. No.	Total Freight	Freight T. B. D.	Account Charged	Invoice Passed	

register in order of their receipt. As the goods are received the freight and deductions are entered on this sheet and the invoice is put in line for passage by being put on the invoice list.

FIGURE 23

WISCONSIN IRON PRODUCTS COMPANY

Sheet No..........

[illegible] have been approved and taken into........

....................................account.

[illegible] ....191..   ....Works.

[illegible]	FREIGHT VOUCHER NUMBER	NAME	AMOUNT	REMARKS
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		....	....	....
		[illegible] Forward from	....	....
		[illegible] Date, this Month's [illegible]	....	....

[illegible] LIST

[illegible] approval and payment by being [illegible] voucher department.

is merely intended for stock the invoice is posted on a stock card. (See Figure 24, page 330.) Invoices are entered on that card in the order of their receipt. There are two cards for each kind of material. One is kept in the office, and a duplicate should be retained in the storeroom and nailed on the bin in which the material is kept. Entries on both cards should be made in duplicate at all times and these two cards serve as checks on one another. This stock card is divided in the middle by a double red line. Everything to the left of that line refers to incoming goods; and to the right, to outgoing; and on the extreme right, the balance of material is shown; thus constituting a perpetual inventory. As the material is issued, the quantity, price and net value are posted on the right-hand side and the balance of material is drawn down so that the quantity on hand is always shown. These cards have a double purpose, not only serving as a perpetual inventory, but also showing the price at which the goods must be issued. These prices are entered in the price book (see Figure 25, page 336) from these cards. Actual inventory is taken once a year to check these cards, when appropriate reconciliation and adjusting entries are made. The price book is a plain blank book alphabetically arranged to show the prices of the various goods charged to the different departments. The storeticket (see Figure 21, page 325) shows prices inserted from this book.

67. *Material for production.*—The material for production is handled in a very different way. Owing to the immense amount of supplies required and the fact that it is received in carload lots, it is almost impossible to get accurate weights at any specified time. The ore is dumped into great piles after being conveyed from the ships by means of ore conveyors and is left exposed

STOCK CARD

The invoices are entered on this card in the order of their receipt. There are two cards for each kind of material; one is kept in the office and the other is nailed on the appropriate bin in the store room. These two cards are identical both in form and postings. Everything to the left of the double line in the middle of the card refers to incoming goods and to the right to outgoing goods, showing the balance of the material to the extreme right. As the material is issued, the quantity, price and net value are posted on the opposite side, and the balance of the material is drawn down, so that the quantity of material is always shown. These cards act as a perpetual inventory and show the price at which goods must be issued. These prices are entered into the price book from these cards.

FIGURE 25

PRICE BOOK

This merely shows the prices of various goods charged to the different departments and is made up from the stock card. The store tickets (see figure 21) have their prices inserted from this book.

to the weather for an indefinite length of time. It may be readily seen that there can be no accurate accounting up to this point because the opportunities for waste are so great and because of the large amount of foreign matter in the ore. The ore is distributed from these great piles to the furnaces, into which it is dumped by means of ore-handling machinery. There is an attempt made to weigh this ore, but only approximate results can be ascertained.

When the material goes from one department to another there is the greatest opportunity for error, since it has been known to vary as much as 5 per cent of its weight, due entirely to the atmospheric condi-
The disposition of scrap involves unavoidable
This scrap is taken away in small cars and

FIGURE

WISCONSIN IRON

....

RECEIVED DURING MONTH OF

F. O. B. ....

Nos.	Date of Shipments	ROUTE	Vou. No.	Expense Bill No.	FREIGHT		Date Unloaded	INITIAL	Car No.	WEIGHT	
1 2 3 4 5											
6 7 8 9 10											
11 12 13 14 15											
16 17 18 19 20											
21 22 23 24 25											
26 27 28 29 30											
31 32 33 34 35											
36 37 38 39 40											
41 42 43 44 45											
46 47 48 49 50											
51 52 53 54 55											
56 57 58 59 60											

MATERIAL RECEIVED RECORD

All material received from the outside for purposes of production is entered on this sheet. There are one or more sheets for each shipper. From

ODUCTS COMPANY

Shipped by........................

..................................191...

From............................

EIGHT	WEIGHT	WEIGHT	WEIGHT	WEIGHT	WEIGHT	WEIGHT	

these sheets are made up the stock ... ent weights column
refer to the different kinds of mat ... s on the left-hand
margin refer to the shipments duri

while it is actually weighed, still it is usually in such irregular form and condition that a large amount of dirt, cinders, etc., is contained in it. The weighing and counting of ingots is also often very unreliable for various reasons. From these facts it may be seen that any system of accounting for handling materials for production such as are used in the Wisconsin Iron Products Company must permit of great latitude for personal judgment. The clerks' duties are as much a matter of reconciling or editing weight reports from the different departments as they are of actually doing the appropriate bookkeeping work.

68. *Material received record.*—When material is received from the outside and intended for production, it is accumulated on the material received record. (Figure 26, pages 332–333.) This is a loose-leaf book in which records are kept for one month at a time, providing for all the details of the shipment, such as route, voucher number, expense bills reference, freight, date of unloading, car number and weight. There is a page for each shipper and room enough on a page to allow for sixty shipments during the month. The totals of material unloaded at the various departments are transferred to the stock record every month (see Figure 27, page 335), which gives a complete inventory of the stock for the month, showing stock produced or received, used or shipped, transfers and balance. From this stock record the total of each kind of material is entered on the stock ledger with the money value. This stock ledger differs in no way from the common stock ledger used generally by all companies.

69. *Material account of the C Manufacturing Company.*—The C Manufacturing Company does not divide its material into repairs and production but keeps

Figure 27

WISCONSIN IRON PRODUCTS COMPANY

..............................Works

Stock Record for the Month of....................191...

Material	Balance	Produced or Received	Transfers	Total	Used or Shipped	Transfers	Total	Balance	Estimate

STOCK RECORD

The totals of various materials unloaded at the department are transferred to this stock record from the material received record, and the total tonnage consumed and produced for the month and the balance remaining on hand are obtained from the production sheet. .

it all in one account and treats it in a similar way. Orders are made on the storekeeper as heretofore explained. He, in turn, makes a requisition on the purchasing agent and shows a proper account number, for which the material is requisitioned, and invoices received are entered on the invoice register. All goods are charged out to the various departments at the price at which the last of these goods was purchased. A daily report of material delivered (see Figure 28, page 337) is made out and sent in each day to the general offices. This material is delivered as a result of an order from the foreman, who gets his authority from the order originating in the engineering department. (See Figure 29, page 338.) These orders are a collection of blue prints bound in book form, one book for each machine that is made. They are used over and over again giving full and detailed information in regard to the work done, showing what department it goes to and the order in which it goes. The foreman on getting this order, has the material sent to him as explained and sets the men under him at work at that operation which is to be performed in his department. Each piece or set of pieces is accompanied by two cards, one a tag (see Figure 30, page 339), which is fastened on or wrapped with the piece which shows the order number, symbol, piece number, the number of pieces started and the card number. This card follows the work through until its completion. The other card is the work card. (See Figure 31, page 340.) This card also follows the work until its completion when the proper blanks are filled out at each delivery from one department to another. The order book (see Figure 29, page 338) is the one containing blue prints, there being one for each (
The original book which is kept on file is made

FIGURE 28

DAILY REPORT OF MATERIAL DELIVERED

DATE DEPT. NO. FOREMAN

Order No.	Symbol	Piece No.	Work Card	No. of Pieces	Kind Material	Size	Weight	Del. to Depart. No.	REMARKS

it all in one account and treats it
Orders are made on the storekeep
plained. He, in turn, makes a re
chasing agent and shows a proper
which the material is requisitioned,
are entered on the invoice regi
charged out to the various depar
which the last of these goods wa
report of material delivered (see
is made out and sent in each d
This material is delivered as a
the foreman, who gets his a
originating in the engineering
29, page 338.) These order
prints bound in book form,
that is made. They are use
ing full and detailed inform
done, showing what departm
in which it goes. The for
has the material sent to hi
men under him at work a
performed in his depart
pieces is accompanied by
ure 30, page 339), whi
with the piece which sh
piece number, the numb
number. This card fo
completion. The othe
Figure 31, page 340.)
until its completion
out at each delive
The order book (
containing blue
The original bo

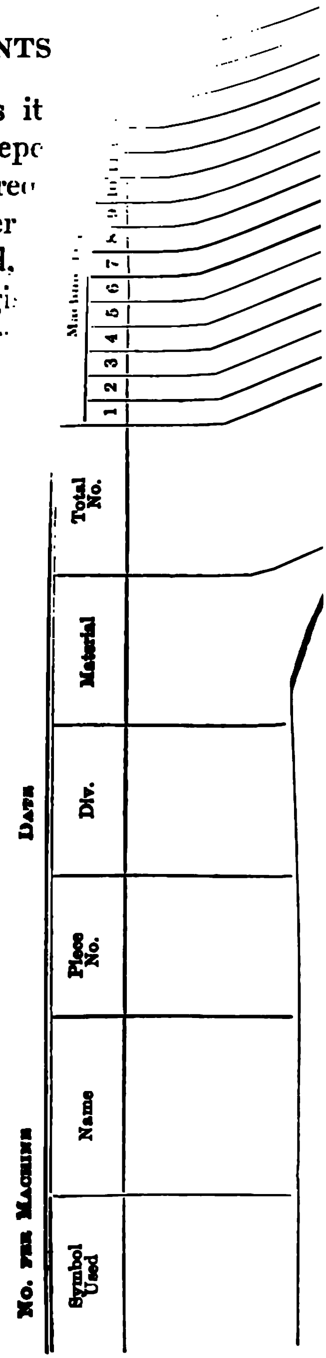
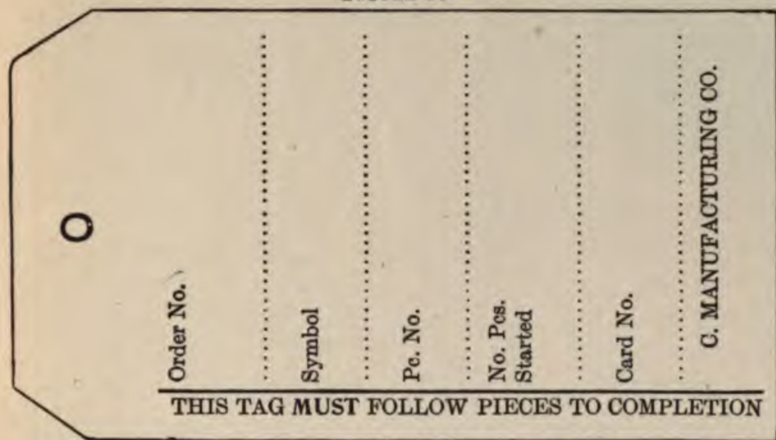


FIGURE 30



PIECE TAG

tracings from which the various blue prints are made. The casting clerk gets the order book and orders the proper castings from the store department. He makes out the work card and tenders what is known as the heat report, which is received daily from the foundry showing a complete record of all castings made the day before, and enters this heat report on what is known as the casting record card. A set of these cards is kept in the card index and acts as a perpetual inventory of all castings.

After the work cards are made out by the casting clerk they are given to the shop pusher, who keeps them in a card index until some department is nearly out of work. Then the proper castings are delivered to the department, along with the tag and work card, and the work started. When the work is commenced, entries are made on the detailed cost sheet which was shown in Figure 15 on page 313. This detailed cost sheet is filled out daily from the inspector's report. The inspector judges of the quality of every piece sent out and

FIGURE 29

ORDER NO.

No. Required

No. of Pieces

Date

sends his report to the pusher. The work cards act as the storekeeper's authority for delivery of the castings. Factory reports are made out at the end of each month, or at the end of each job, and are turned in to the general offices.

70. *Material record of A & B Manufacturing Company.*—In the A & B Manufacturing Company's plant, when an order is sent out, a blue print is made of the left-half of the onion-skin requisition sheet. (See Figure 32, page 342.) The unit of completed material for the A & B Manufacturing Company's works is the blue print made for every bundle. The different parts of the bundle are listed, together with the symbol of each piece and the number of pieces to a complete machine and other data. The two columns shown in black on the right-hand side of Figure 32, of course, appear white in the blue print, and after the description of each piece in the bundle is filled in in ink on the blue print the order number in the shop and the number of pieces required are shown. There is one onion-skin duplicate kept in the blue-printing department for every bundle manufactured, and all data except that put in the two right-hand columns is filled in on the typewriter. One of the prints goes to each department which had to do with the making of this bundle.

In Chapter IV we noticed that there was a detachable slip on the work card which appears in Figure 11. This form serves as a record of all material used in the making of a piece and the slip is detached and sent to the superintendent's office on the date of the delivery of the material.

When the material is drawn from the storeroom it is entered up on the stock card blank shown in Figure 14. These blanks are filed in cases, a card index drawer

FIGURE 31

REQUISITION

FIGURE 33

SHOP ORDER NO.	OFFICE ORDER NO.	ISSUED 19	COMPLETED 19

ORDER FOR	TOTAL COSTS	
	COST LABOR	$
	COST MATERIAL	
	SHOP EXPENSE	
	TOTAL SHOP COST	$

Date	Lot No.	Article	Amt. Del'd	Value	Qr. Hrs.	Labor	Sh. Ex.
				$		$	$

DETAILED COST CARD

This card is used only for special orders, such as repairs. It is a good form for a company making a big unit, but where parts are made it is an unnecessary blank. It is nearly impossible to keep track of orders, as so many of the same parts are being made under different order numbers at the same time.

for each of the following items: cast iron, steel and wood. There is a card or set of cards for every article used or manufactured in the plant. The unique feature about this card which differentiates it from any of the other stock cards shown so far is that the balance column controlled by the double black line is between the delivered and received columns, leaving little opportunity for clerical errors in drawing down the balance.

The ledger card which we noticed in the last chapter in Figure 13 is really a cost card for each piece manufactured. Both labor and material are posted on this card and the shop expense is also shown here, giving a complete record of the total cost of each part. This is one of the most concise ways of ascertaining and recording costs noticed so far.

There is another cost card used which is hardly suit-

FIGURE 34

CHICAGO, MILWAUKEE & ST. PAUL RAILWAY

Storekeeper: ....191...

Furnish Bearer..

....

....

....

....

Charge to Account of..

....

Foreman

GENERAL ORDER SLIP

This is a general order on the storekeeper made out by the foreman for material needed in construction. All charges are made from these material slips.

able for a plant making such a large number of small parts, but which would be admirable for an organization such as the C Manufacturing Company. It is used by the A & B Manufacturing Company for special orders. (See Figure 33, page 343.)

71. *Storeroom systems.*—The West Milwaukee shops of the Chicago, Milwaukee and St. Paul Railway have a storeroom system which is very extensive and very well managed but not particularly unique. It provides for the orders on the storekeeper (see Figure 34, page 344) and requisitions on the purchasing agent. (See Figure 35, page 346.) There is always an order from the general storekeeper to the foundry (see Figure 36, page 347) which corresponds to the requisition on the purchasing agent (Figure 35, page 346). Charges against other departments are rendered on bill-heads such as are shown in Figure 37. There are other order blanks for orders on the storekeeper from outside parties. These are the blanks of the different division storekeepers which are made out in ordering from the general storekeeper.

Figure 35

Req. No........

CHICAGO, MILWAUKEE & ST. PAUL RAILWAY

General Storekeeper's Office,.................191...

Requisition for Material on Purchasing Agent

Articles to be delivered to..

LEAVE BLANK	QUANTITY	DESCRIPTION

General Storekeeper

REQUISITION ON THE PURCHASING AGENT

This is the general form of requisition made on the Purchasing Agent by the General Storekeeper.

FIGURE 36

CHICAGO, MILWAUKEE & ST. PAUL RAILWAY CO.

ORDER FOR SUPPLIES FROM FOUNDRY

No................. *Milwaukee Shops,*..............191..

Ship to CHICAGO, MILWAUKEE & ST. PAUL RAILWAY CO.

%..........................

....

Book......*Page*......*Reqn.*...... ....

No. Pieces	ARTICLES	No. Pattern	For What Purpose
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....

Ordered by............................

Approved by............................ J. W. TAYLOR
Storekeeper

ORDER ON FOUNDRY

This is an order from the general storekeeper to the foundry for an article needed in the store room. It corresponds in form to the purchasing agent's requisition.

FIGURE 35

CHICAGO, MILWAUKEE & ST. PAUL RAI[illegible]

General Storekeeper's Office,......

REQUISITION FOR MATERIAL ON PURCHAS[illegible]

Articles to be delivered to..........................

LEAVE BLANK	QUANTITY	DESC[illegible]

REQUISITION ON

This is the general form of
by the General Storekeeper.

Correct: ....

Approved: .... Gen'l Storekeeper

.... Comptroller

Received Payment..........................

CHICAGO, MILWAUKEE & ST. PAUL RAILWA[illegible]

By..........................

BILL FORM

A bill on which charges against other departments are rendered. Bills on this form are made up in the stores office not only for oil and waste as shown but for all other material which is kept in the store room.

CHAPTER VI

[illegible]IAL: DISTRIBUTION

[illegible]thod *of distribution.*—The general [illegible]uting material is much the same as [illegible]r. The original material order slips, [illegible]ave been several examples given in this [illegible]rted each day at the proper departments [illegible] order numbers. Then the entries are [illegible]stribution sheets direct from these tickets. [illegible] one of these distribution sheets is shown [illegible]8, page 350 which is a blank of the Wiscon- [illegible]roducts Company distributing stores for one [illegible]ch department. These sheets are made out [illegible]ate, the original being retained in the cost de- [illegible] and a carbon copy sent to the superintendent [illegible]department to which it refers. At the end of [illegible]onth postings are made to the "spread" or "dis- [illegible]ion sheet" (Figure 39, pages 352–353), which is [illegible]ted for large loose-leaf volumes. A sheet is pro- [illegible]d for each month, for each subdivision for each de- [illegible]tment. Different account numbers are put in [illegible]oper order in the left-hand column. The next col- [illegible]mn following contains the different voucher numbers. In the next column or columns appear the material turned out by that department. Again the procedure begins with the account numbers and continues across the sheet. For example, we will consider the distribution of the slab and bloom mill as shown for the month of August. The first item on the page is account 503,

DAILY STORES DISTRIBUTION

Sheets like these are made up from the store tickets, and each department head receives the sheets properly belonging to his department daily. The total amount consumed during the day is entered on these sheets. Duplicates of these sheets are saved in the general offices and from them is made up the monthly distribution sheet.

voucher 94. There is an arbitrary division between slabs and billets, so that there are two columns given, one for slabs amounting to $113.34, and one for billets of $192.07. Thus the total product of the slab and bloom mill for one month is distributed to the various account numbers as shown. Each account is totalled and none are carried forward. From this spread or distribution the material voucher is made up. (See Figure 40, page 354.) This is practically a recap of the spread displayed in a different form so as to serve as a journal for entering in the ledger. A great number of special vouchers are made up from it and these distribute expense to a great number of special expense accounts. From this point it is best to go no further at this time, continuing when we come to combine all the information compiled by the cost department into the monthly cost sheet and exhibits.

73. *Distribution of cost in the C Manufacturing Company.*—Referring to Figure 20, which is a detailed cost sheet, we see that on this blank can be recorded detailed costs of actual labor and material applied to an order leaving out the burden which is treated in Chapter V. The cost is divided not only for each piece, but also for every department through which that piece passes. A recap of this detailed cost sheet is made on a blank line like that shown in Figure 41. This contains practically all the information shown on the larger sheet, and is used to insert in a loose-leaf note-book and is carried by the shop pusher when an order is nearing completion. When an order is entirely completed this form is destroyed and the detailed cost sheet is preserved for future reference. There is another cost sheet (see Figure 42, page 356) which is sent in to the office at the completion of an order. It is also a recap of the detailed cost

FIGURE 38

WISCONSIN IRON PRODUCTS COMPANY

. . . . WORKS

. . . . . 191. . . .

FIGURE

WISCONSIN IRON

DISTRIBUTION OF

MILL

...nt	Vouchers	Slabs	Billets

...N

... the daily stores distribution

... department for the month

PRODUCTS COMPANY

SLAB AND BLOOM DEPARTMENT

MONTH OF AUGUST, 191

Account Nos.	Vouchers	Slabs	Billets	Account Nos.	Vouchers	Slabs	Billets	

according to the various account numbers and the card of accounts relating to that department. Each account is totalled and is complete in itself. This distribution is a step toward making up the journal voucher.

FIGURE 40

WISCONSIN IRON PRODUCTS COMPANY

JOURNAL VOUCHER *No.....* *Folio....*

STORES AND MATERIAL

..................*Works* ....191...

JOURNAL MATERIAL VOUCHER

This material or journal voucher is made up from the abstract or spread. From this journal voucher the amounts are post[illegible] used to make up some 125 or more special vouc[illegible] special vouchers are made up from the two [illegible] journal.

Figure 41

C. MFG. CO.—COST DEPT.

ORDER NO.	NO. PCS.	SYM.	PC. NO.	NAME	TO DEPT. NO.						REMARKS

RECAPITULATION

CHECK YOUR INITIALS AN...

	Total Labor	$	$
	Shop Expense		
	Material		
	Total Shop Cost		
	Sales and Gen'l Off. Exp.		
	Total Cost		
	Margin on Above		
	Stock Goods at Sales Price	$	$
Attention of H. S. J. &	Regular Billing Price		
	Compared with Last Order	Reduction of / Increase of	
	Reason		

COST REPORT SHEET

sheet and the following items are filled out in the cost department; the two dates in the upper left-hand corner, the name of the order in the upper middle, number of machines and the symbol. The "shop order" space is filled in by a numbering machine. The office order number is inserted in the proper space and the number of hours for pattern work, machine work and erecting are inserted, being taken from the detailed cost sheet. The total labor costs for each one of those classes of labor is ascertained from the same source and the cost of one machine. The entire cost is then totalled and inserted in the column headed "labor." An item called "job expense" will be noted just below the total labor line. This will be treated later under the subject of burden. The material cost, both total and for one machine, is made out from the material record described before. Everything else on this sheet is filled out in the office and the report is then filed in the office giving concise data as to the cost of making machines.

74. *Distribution of cost in railway shops.*—The shops of the Chicago, Milwaukee & St. Paul Railway, at West Milwaukee, have a large number of distribution blanks, a few of which are worthy of notice in this connection. Figure 43 (page 358) is a sheet showing the cost and detail of repairing an engine. The data for this cost sheet is made up from the material slips and from the time-book entries. The two items, shop and store expense, will be considered later under the head of "Burden." Most of these distribution sheets, dividing various expenses between material and labor in the stores department of these works, are made up for the use of the officials. A blank is shown in Figure 44, pages 360–361. The information on this sheet is also compiled from the same source as that on Figure 43. When an

FIGURE 42

Carpenter,	"	
Painter,	"	
Tinsmith,	"	

Correct:

Labor	
Shop Expenses	
Material	
Store Expenses	
Total	

DISTRIBUTION SHEET

This form is made up in the office from the reports of material slips and the time book entries. They distribute the repairing cost for engines and there is a similar one for cars. They are made up for the use of the general storekeeper, and are not sent to the offices.

order is completed in the shops all details of the cost of the order and the total cost are entered on Figure 45, page 362. This cost sheet is used in the storekeeping department for comparative purposes. A foundry is run in connection with this shop, and in one part general castings are made and there is a cost sheet made up from the foundry reports which come in daily. (Figure 46, pages 364–365.) This report goes to the general offices at Chicago. The blank shows very well the extreme care which is taken in distributing the expenses of scrap, it being divided into nine classes. Almost as great care is taken in this foundry as in the Wisconsin Iron Products Company, where the most minute subdivision of scrap is also made. Near the bottom of the sheet appears the total foundry cost, including metals, cost of melting, molding and cores, and below that is given items of burden which will be considered in a later chapter. A blank very much like this one is used in the foundry which makes only car wheels. The scrap from the wheel foundry is all turned over to the general foundry, which accounts for no items of scrap being imported. (See Figure 47, pages 366–367.)

75. *Distribution of cost in the A & B Manufacturing Company.*—The A & B Manufacturing Company uses a sheet of onion-skin. (Figure 48, pages 368–369.)[1] It is very much like Figure 32, and is, in fact, the same

[1] This distribution sheet is very important, as it is from this that all the cost accounting is written up. This sheet is known as an onion-skin and is transparent so as to allow blue printing to be done through it. At the beginning of the season sheets like this are typewritten, a sheet for each bundle (as a complete unit of parts is known) when an order comes in with one of these bundles the superintendent has the blue printing department print off a certain number of these blanks, one of which goes to each department which has to do with the making of this bundle. The two columns headed "order number in shop" and "pieces required" are filled out in ink with the necessary figures for the proper department. These sheets act as instructions and specifications for the department. The black part, which for ordinary purposes is not used, is utilized at the end of the year as a detailed cost account for the different parts of

III.	TRAFFIC EXPENSES				
15	Superintendence				
16	Outside Agencies				
17	Industrial and Immigration Bureaus				
18	Stationery and Printing				
IV.	TRANSPORTATION EXPENSES				
19	Superintendence				
20	Station Employees				
21	Station Supplies and Expenses				
22	Yard Supplies and Expenses				
23	Yard Enginemen				
24	Enginehouse Expenses—Yard				
25	Water for Yard Locomotives				
26	Lubricants for Yard Locomotives				
27	Other Supplies for Yard Locomotives				
28	Road Enginemen				
29	Enginehouse Expenses—Road				
30	Water for Road Locomotives				
31	Lubricants for Road Locomotives				
32	Other Supplies for Road Locomotives				
33	Train Supplies and Expenses				
34	Telegraph and Telephone—Operation				
35	Stationery and Printing				
36	Other Expenses				
37	Loss and Damage—Freight				
38	Damage to Property				
V.	GENERAL EXPENSES				
39	Salaries and Expenses of General Officers				
40	Salaries of Clerks and Attendants				
41	General Office Supplies and Expenses				
42	Stationery and Printing				
43	Other Expenses				
	FORWARD:				

DISTRIBUTION SHEET

This is a monthly distribution made up at the stores department for the storekeeper's use. It distributes various expenses between material and labor.

FIGURE 45

ORDER NO.............

ISSUED....................ON....................DEPARTMENT

To...

....

To be shipped to............................ ....

Ordered by...................*Req'n*............*Finished*...............

Cost......................*Charged*.............*Month*................

		DETAIL OF COST					

DISTRIBUTION SHEET

When an order is completed it is entered on this blank showing all the details of the order, details of the cost This sheet is made up in the office and is used th

except that it has an additional amount of blue-print matter. In examining the blank closely a heavy white line will be noticed, next to which appears in small type "trim here." This means that when the blue print is made for the specifications the sheet, instead of being full size as shown in Figure 48, is trimmed off at that line. At the end of the season a set of blue prints is made, one for each of the specification sheets of which we saw there were a large number, one for each bundle. The whole sheet is printed and all the space to the right of the dividing line, which will appear white in the blue print, is filled in as a cost sheet from the labor and material records which have been described. This sheet is not filled out until after the inventory is taken, and the four columns of the main heading of stock record are filled out from the inventory record.

The four columns referred to are headed: "Total cost per hundred" and, respectively, material, labor, shop expense and total. The first two are filled out from the records as described. The shop expense column is arrived at by percentage calculation and will be explained in Chapter V. When the whole sheet is completed it is sent to the main office, showing the stock record for each unit manufactured in the works and the total cost per hundred of each of those items divided into the three main divisions, material, labor and burden.

The A & B Manufacturing Company pays the least attention to the subject of distribution and to the making out of cost sheets of any of the companies noted,

each bundle. Material and labor are direct costs. Shop expense is burden or overhead expense and is divided according to the total number of productive hours. For instance, if one bundle is to be charged 25 cents per productive hour and the cost of material of that bundle is $10, the cost of labor $3, and the average time one and one-half hours, then the total charges of that bundle would be $10, plus $3, plus 37½ cents, making a total of $13.37½. This system enables the superintendent to know the cost of any part of a bundle.

Old Wheels				
Old Scrap				
New Scrap				
" "				
Defective Castings				
Return "				
New Wheel Scrap				
Brake Shoe Chills, Wrought Iron				
" " " Cast "				
Manganese				
Less New Scrap made				

MELTING	Coal Anthracite				
	Coke				
	White Sand				
	Moulding Sand				
	Fire Clay				
	Lime Stone				
	Wood, Cords				
	Charcoal, Bush				
	Fire Brick				
	" "				
	" "				
	TOTAL				
MOULDING	Sand				
	Bit. Coal Facing				
	XX Mineral Facing				
	Lime				
	Plumbago Ceylon				
	TOTAL				

Total Cost Metals Used				
Total Cost Castings				

	LBS. OF CASTINGS MADE	Price per 100 lbs.	
Total			

General Storekeeper's Office,

Milwaukee Shops........................191...

....

General Storekeeper

CORES	Flour, Rye				
	Core Sand				
	Sand				
	Coke				
	Sand, Fire				
	Core Wash				
	Molasses				
	Charcoal Facing				
	Mineral "				
	Hay				
	Coal Tar				
	Total				
OTHER EXPENSES	Electric Power				
	Coal for Boiler				
	Oil for Machinery				
	General Expenses				
	Salaries and Labor				
	Total				

SUMMARY	Metals		
	Melting		
	Moulding		
	Cores		
	Other Expenses		
	Total		

FOUNDRY EXPENSE DISTRIBUTION

This sheet for the general foundry is made up from the foundry report and is sent to the general offices monthly.

General Casting Foundry

				Melting	Lime Stone				
					Fire Clay				
					Wood, Cords				
					Charcoal, Bush				
					Fire Brick				
					" "				
					" "				
					Total				
Less New Scrap made				Moulding	Sand				
					Bit. Coal Facing				
					XX Mineral Facing				
					Paraffine Oil				
					Total				

TOTAL COST METALS USED				
TOTAL COST WHEELS				

Size and Kind of Wheels	No. of Wheels Made	Av. Weight	Price per Wheel	
		Lbs.		
		"		
		"		
		"		
		"		
		"		
		"		
		"		
TOTAL				

GENERAL STOREKEEPER'S OFFICE

Milwaukee Shops..............................191...

....
General Storekeeper.

CORES	Flour, Rye				
	" Low Grade				
	Core Sand				
	Sand				
	" Fire				
	Coke				
	XX Mineral Facing				
	TOTAL				
OTHER EXPENSES	Electric Power				
	Oil for Machinery				
	General Expenses				
	Salaries and Labor				
	TOTAL				

SUMMARY	Metals		
	Melting		
	Moulding		
	Cores		
	Other Expenses		
	TOTAL		

WHEEL FOUNDRY EXPENSE DISTRIBUTION

This sheet for the wheel foundry is made up from the foundry reports and is sent to the general offices monthly.

providing for a report once a year instead of once a month or oftener. This practically ends the subject of material in its handling and distribution. In theory the management of labor is a very simple matter, in practice it sometimes becomes most complicated, but there are a few cardinal principles in regard to the handling of material, which, if understood, will make the most complex system intelligible.

LIST No.............

......Sheets. Sheet No....... MACHINE

THIS SHEET TO DEPT'S

BUNDLE

A. & B. MFG.CO.	Description	Symbol	Pcs. to Mach.	Size	Length	Bar Length	P
MADISON,							
WIS., U. S. A.							
Form A.20							

CHAPTER VII

BURDEN

76. *Burden or overhead expense.*—The subject of burden is one of the most difficult and complex divisions of cost accounting. Burden, or as it is commonly called, overhead expense is treated in almost as many ways as there are factories sustaining it. It consists of general and indirect expenses, everything outside of prime cost items, which do not properly go on any particular department, job or account number. For instance, while it is simple to charge two hours' pay against a certain order number if you have work slips showing that workmen have spent two hours on that order number, it is not so simple to find out how much of the superintendent's or foreman's salary should be apportioned to it. The superintendent, for example, has undoubtedly spent some time, and perhaps a great deal, on the job considering and working over it, but it is next to impossible in the practical working out of the accounts to get any accurate results as to how much time he has expended upon it. Likewise, it is easy to charge the rent and insurance on a building to a department which alone occupies that building, but how to distribute the cost of that rent and insurance among the different machines and over the total output in the department is another matter, and so many elements enter into the problem that no universal rule may be given. It is to be observed that the subject of burden, or overhead expense, is something that cannot be regu-

etc. There may
entage or burden i
ant. Some comp
expenses indirect;
Iron Products Com
accounts—regarded b
system of accou
keeping costs—have
what most administr
pense, leaving only a
percentage treatr
in any other way.
constitute what is usu
but the idea must no
the overhead expense
item can be.

overhead expense

dividing overhead expe
the greatest promine
enunciated by Mr. Em
Journal of Accountan
varying with the quant

is on the unit basis. It will, however, be seen that in the case of a factory turning out several grades of the same article, even this could not be used without taking into consideration other factors, which would charge the greater part of factory expense to the higher rather than to the lower grade.

The second method, which is the percentage on prime cost, is not to be recommended except in small establishments where a complete cost system is not practicable.

The third, or percentage on direct labor method, is good in any concern, but it is not applicable in a business which manufactures both large and small goods, involving in one case the use of heavy machinery and in the other a number of small machines.

The fourth, or percentage of time spent by direct labor, is probably the most scientific method of distributing factory expense. The element of time enters largely into most of the fixed expenses of the business. This method, therefore, brings out very clearly the great importance of speed in attaining results, since many of the factory expenses go on the same whether the factory is running or closed down.

With regard to the fifth method, machine costs, it is to be noted that machinery has, to a very large extent, taken the place of what prior to machinery would have been known as direct labor. Also the most accurate costs can be obtained where the predominance of the cost is in the cost of material and direct labor, leaving only a small amount of factory expense to be distributed. It follows, as machinery is only another form of labor, that if we could, by any process of figuring, compute the cost of the machine in the same manner as we can direct labor, we should then arrive at a more accurate record of determining costs. Only with

respect to machinery which carries out a distinct part of the manufacturing can this method be used. Thus, travelling cranes, shafting, pulleys, etc., cannot come under this classification.

The factors that enter into machine cost will include the following: (1.) Interest on investments; (2.) depreciation; (3.) repairs. To these factors others may be added, such as rent of floor space and amount of power supplied. On arriving at the cost per annum of each of the above factors in respect to a machine, the normal number of hours that it will work during the course of a year is estimated and the total number of hours during the year is then divided into the total cost per annum, and in this way we arrive at what may be termed the machine cost per hour. By adding to this the cost for the man employed per hour to operate such machine or machines, we obtain what is termed the machine rate.

78. *Illustrations of distribution of burden.*—It will now be interesting to see how overhead expense is taken care of in a number of manufacturing plants. One of the best examples is the Wisconsin Iron Products Company. We left the subject of labor with the labor voucher sheet, which, it will be observed, had all the labor divided into various accounts and the total for each account number noted. We saw that there was a corresponding sheet in the subject of material called the material voucher. From these two records are made up the cost sheet exhibits, and special vouchers. The cost sheet is the ultimate goal toward which all cost accounting processes point. There are a large variety of these sheets, but they are so nearly alike that it will only be profitable to note one, which is a representative sheet. (Figure 49, pages 376–377.) The name of the depart-

ment of the works is filled in, also the month and year. A blank is left after the "cost of finishing" so that any of the structural shapes, rails, plates, etc., may be filled in. On the left side of the sheet is a column for account numbers.

The next column is headed "items." These items are separated from one another by red division lines into classes. The first collection of items consists of "long bars—Bessemer" and "long bars—open hearth" and "partly finished bars—Bessemer," "partly finished bars—open hearth." By extending these items, finding the proper amounts to be entered from the production sheet, and totalling the "gross tons" column, we find the "gross metal charge."

In the next section, which contains scrap items, also obtained from the production sheets, is shown an amount to be subtracted from the "gross metal charge," leaving "net metal charge."

The next section, which deals with fuel for heating and miscellaneous purposes, is obtained from the journal voucher. The three items of labor which follow are obtained from the labor voucher, and these three items —producing labor, labor and repairs, and labor and maintenance—are totalled. The next four items; material and repairs, material and maintenance, lubricants and tools are posted to this sheet from the stores voucher.

The rest of the charges on the sheet, except laboratory, general works, and contingent fund expense, are made up from the separate vouchers and exhibits. The laboratory expense is distributed according to the amount of and kind of material used by each department in the laboratory. The general works expense is distributed by a direct burden percentage charge and

Open Hearth
Gross Metal Charged
Less Melting Steel Scrap (Crops, Etc.)
" " " " (Punchings)
" Partly Finished Bars
Less Total Sundry Products
Net Metal Charged
Fuel for Heating
Producer Gas
Coal
Natural Gas ... Cu. Ft. @
Total Heating Expense
Fuel for Miscellaneous Purposes
Coal
Labor: Producing Labor
Labor: Labor in Repairs
Labor: Labor in Maintenance
Labor: Total Labor (Enter in Different Colored Ink)
Material in Repairs

	Material in Maintenance												
	Lubricants												
	Tools and Miscellaneous Supplies												
	Steam												
	Water												
	Electric Light and Power												
	Yard Switching												
	Laboratory Expense												
	Stable Expense												
	Shop Expense												
	General Works Expense												
	Contingent Fund												
	TOTAL COST ABOVE NET METAL												
	GRAND TOTAL COST												

Tons Produced .... Cost from One Ton Gross Metal to One Ton Product ....
Number .... Hour Turns .... Average Tons per Turn ....
Tons Produced Since Jaunary 1st .... Manufacturing Cost per Ton Since January 1st ....

PRACTICE

PRODUCT	MATERIALS USED		PRODUCT		SCRAP		SCALE & CYLINDER		LOSS	
	Tons	%	Tons	%	Tons	%	Tons	%	Tons	%
		100.0								
		100.0								
		100.0								
		100.0								
		100.0								
		100.0								
		100.0								
		100.0								
		100.0								
		100.0								
TOTAL		100.0								

COST SHEET

the contingent fund is distributed on a tonnage basis.

All items below "net metal charge" are added to the net metal charge making up the grand total cost, thus completing the purpose of the cost sheet. Below, however, is some general information. The items "non-produced," "number of hour turns," "tons produced since January 1" are all made up from the production sheet. The item "cost of one ton gross metal to one ton product" is the difference between the price of "gross metal charge" and "grand total cost." The item "average ton per turn" is obtained from the production sheet, and the manufacturing cost per ton since January 1st is a statistical item obtained from this and previous cost sheets.

At the bottom of the sheet is a section headed "practice." The various products turned out by the department are put in the proper column headed "products." The rest of the columns show in percentages of actual tons of material used, what the percentage, tons weight of the product scrap, scale, and cinders, and loss are in actual practice. The exhibits of which we spoke are very much like the cost sheets except that they are made up for one special item—steam, water, electric light and power have separate exhibits. These are sent in along with the cost sheets to the main office.

79. *Expense distribution by the number of productive hours.*—The A & B Manufacturing Company distribute their overhead expense according to the total number of productive hours. For instance, if a certain kind of bundle is to be charged 25 cents per productive hour and the cost of material of that bundle is $10, cost of labor $3, and the average time for making the bundle one and one-half hours, the average cost of that bundle would be $10, plus $3, plus 37½ cents

a total of \$13.37½. This burden is then distributed over the different parts of the bundle and inserted in the blank in Figure 48, page 368, in the extreme right-hand column. The same figures are also posted to the ledger card mentioned before in Chapter IV.

80. *Distribution on basis of money value.*—In the West Milwaukee shops of the Chicago, Milwaukee and St. Paul railway the overhead expense of the stores department is distributed on the basis of money value from the material issued. They have another item of overhead expense which they call shop expense, and this is figured on the basis of labor employed. This shop expense covers all miscellaneous labor which cannot be charged to a particular job. Such items as operation of power plant, repairs made to stationary boilers and engines, shop foremen, clerks, timekeepers, etc., are covered by shop expense. In the C Manufacturing Company, the burden is divided on the basis of the number of cents of cost per hour of direct labor. This is a slight variation of the fourth division of Mr. Reckitt's classification of burden, and is very scientific. This plant keeps card index records of all machines, allowing for the depreciation of each machine. This depreciation is written off yearly in the main office. After the overhead expense is determined the lower half of the blank shown in Figure 42, page 356, is filled in at the office, also the item of shop expense, giving the complete record of the total cost of the entire order and for one machine. The detailed cost sheet in Figure 20, page 318, is also filled in, making a complete record.

81. *Determination of percentages.*—Clarence M. Day[1] illustrates in a clear manner various bases of determining percentages, as follows:

[1] "Accounting Practice," published by D. Appleton & Company.

Determining Percentages

After the material and labor cost has been computed, for either the department or the plant at large, a percentage is added to said cost to cover the expenses. More disappointment is caused by making errors in determining the percentages to be employed than in any other way. Extreme care should therefore be used when preparing the percentages.

PERCENTAGE OF EXPENSE BASED ON LABOR COST.

If the percentage of the expense is to be based on the labor charge, ascertain the amount of the labor and expenses for the year, and divide the total expense by the total labor.

Hypothesis:

Expenses ÷ *Labor* = *Percentage.*

This percentage is the ratio of the expenses to the gross labor charge. Consequently, if the charge to the cost sheet is for productive labor only, the productive labor must be increased by the percentage for non-productive labor. To determine the percentage to be added to productive labor for non-productive labor, divide the non-productive labor by the productive labor.

Hypothesis:

Non-productive Labor ÷ *Productive Labor* = *Percentage.*

The percentage is the ratio of the non-productive labor to the productive labor.

SELLING EXPENSES.

The cost of manufacture should be determined before provision is made for selling expenses, because the ratio of the selling expenses is to the sales, and is not in any way influenced by the labor or material cost.

After determining the whole cost of manufacturing a percentage should be added to provide for selling expenses. To determine this percentage, divide the selling expenses for the year by the whole cost.

Hypothesis:

Selling Expenses $\div$ *Manufacturing Cost* = *Percentage.*

This is the ratio the selling expenses are to the whole cost.

PERCENTAGE FOR PROFITS.

If the intention is to add a percentage to the cost to provide a profit based on the sales, the best method is to multiply the whole cost by 100 and divide the result by the percentage the whole cost bears to the selling price.

Hypothesis:

100 *per cent* — *Percentage for Profit* = *Percentage of Whole Cost to Selling Price;* (*Whole Cost* $\times$ 100) $\div$ *Percentage of Cost* = *Price to Sell.*

It simplifies matters if you charge all supplies to appropriate expense accounts and include in the percentage costs a sum sufficient to meet them.

DISTRIBUTING UNPRODUCTIVE LABOR AND EXPENSES.

When the expenses are applied to the labor cost on a basis of per man, hour, or any method using the labor as the only basic cost, the pay roll can be made up according to departments on Form II, and the expenses and unproductive labor can be applied in whole or according to departments on a percentage basis or on a basis of fifty-two weeks.

The pay roll should be made up according to departments, and the productive and non-productive labor shown. The expense chargeable to each department for the week should be entered opposite the department and the total expense of the department shown.

The total expenses and the non-productive labor should also be shown in the column provided, and the percentage to be used as a basis of distributing the expenses and non-productive labor over the productive labor, determined by dividing the productive labor by the non-productive labor plus the expenses.

With this method of distributing the expenses it is a very

simple matter to compute individual orders if you have the material and productive labor.

Hypothesis:

Cost of material	$200.00
Pay roll (productive only)	100.00
Expenses 65% of pay roll	65.00
Manufacturing Cost	$365.00

Provide 20% for profits and selling expenses.

($365.00 × 100) ÷ 80 = Sell for $456.25.

II. USE OF PERCENTAGES

COMPUTING COSTS. (First plan.)

Plan of computing the cost where the basic costs are labor and material.

Cost of material		$112.60
Productive labor	$47.60	
Non-productive labor 10%	4.76	
Cost of labor		52.36
Cost of labor and material		$164.96
Expenses 11% of prime cost		18.15
Manufacturing cost		$183.11

Provide 10% for selling expenses.
Provide 20% for profits.
($183.11 × 100) ÷ 70 = Sell for. $261.59

The price to sell at in order to provide 10 per cent for selling expenses and 20 per cent for profit.

COMPUTING COSTS. (Second plan.)

Plan of computing costs where the basic cost is labor.

Cost of productive labor................	$93.15
Non-productive labor 10%.............	9.32
Cost of labor..........................	$102.47
Expenses 60% of labor..................	61.48
Material	301.70
Manufacturing cost......................	$465.65
Provide 10% for selling expenses.	
Provide 20% for profits.	
($465.65 × 100) ÷ 70 = Sell for.........	$665.21

The price to sell at in order to provide 10 per cent for selling expense and 20 per cent for profit.

simple matter to compute individual orders if you have the material and productive labor.

Hypothesis:

Cost of material	$200.00
Pay roll (productive only)	100.00
Expenses 65% of pay roll	65.00
Manufacturing Cost	$365.00

Provide 20% for profits and selling expenses.

($365.00 × 100) ÷ 80 = Sell for $456.25.

II. USE OF PERCENTAGES

COMPUTING COSTS. (First plan.)

Plan of computing the cost where the basic costs are labor and material.

Cost of material		$112.60
Productive labor	$47.60	
Non-productive labor 10%	4.76	
Cost of labor		52.36
Cost of labor and material		$164.96
Expenses 11% of prime cost		18.15
Manufacturing cost		$183.11
Provide 10% for selling expenses.		
Provide 20% for profits.		
($183.11 × 100) ÷ 70 = Sell for.		$261.59

The price to sell at in order to provide 10 per cent for selling expenses and 20 per cent for profit.

CHAPTER VIII

INSTALLATION OF A COST ACCOUNTING SYSTEM ILLUSTRATED

82. *Organization of system.*—The Bridgeport Brass Company of Connecticut, a corporation employing over 1,000 men, is engaged in the manufacture of various forms of metal sheets, wire and rods, as well as other standard metal products, and employs a cost system of which the following is an outline. A diagram page of the organization (see Diagram 2 shown on page 385) shows the relation of the various departments to each other and the responsibility of each, which are clearly defined to avoid the danger of any department performing functions that should be appropriately performed by another. The power of officers is derived from the directors through the general manager. The general offices are under the control of the assistant secretary of the company, and a separate superintendent is provided for each of the following: the raw material department, department of plant, manufacturing department and metallurgical department.

The designation of each department indicates generally the special work that it performs; under the "manufacturing department," for example, Section 34 is "assembling," this being the last department to which manufactured parts go before their condition is appropriate for shipping as a finished product. In this department the various portions of the product are

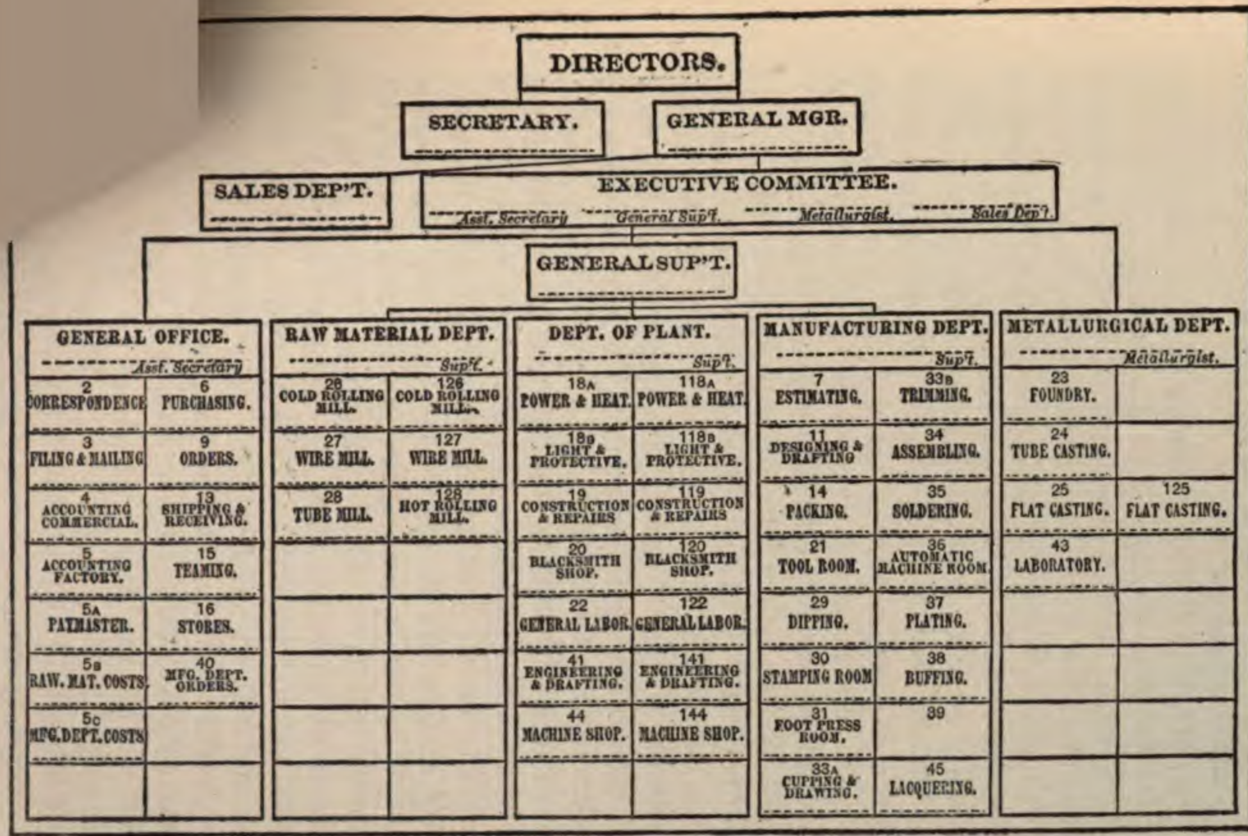


Diagram II. Showing the Business Organization of the Factory, with Names of Officers, etc.

brought together, adjusted, or "assembled" to make an article of commerce.

Mr. Guy P. Miller, treasurer of this company, indicates his clear conception of the necessity for an ideal cost system. The system has been worked out with the idea that if it does not currently prove itself it is misleading and worse than useless, and that the keystone of the entire matter of preparing cost accounting is a scientifically correct perpetual inventory. To insure that a continuous accounting of property is correct, it is plain that it is essential that every item of expense gets into the costs and that the inventory shall provide for fluctuations in the current price of supplies and materials.

83. *Stores ledger requisitions.*—It is designed that the perpetual inventory of raw stores must equal the total balance of the itemized accounts on the ledger account with raw stores. In other words, the total charges to raw stores account in the private ledger are balanced with the debits in the stores ledger account in the stores department, and the credits to the stores ledger (See Figure 50, page 387) are balanced with debits to various cost sheets represented by order numbers in the cost accounting system. In this system everything tends to audit the honesty and accuracy of the clerical force. Care is taken in checking the accounts to determine that raw materials received in a certain month are debited in that month, and to allow for material en route and not received until after the invoice has been included in the office records. Requisitions from the store department (see Figure 51, page 388) on the purchasing agent are made in duplicate, the original going to the purchasing agent, the duplicate being held in the office of the storekeeper in a file representing unfilled orders, until the receiving depart-

FIGURE 50

TALLOW — UNIT LBS. — MAX. 2400 / MIN. 1250

Date	Rec'd	Cost	Del'd	Bal.	Piece	Value	From	Dep't. 27	Dep't. 28			

Stores Ledger, Showing Receipts and Deliveries. Size of Card, 5 by 8 Inches.

FIGURE 51

STOREKEEPER'S REQUISITION ON PURCHASING DEPT. Article *Tallow*

Dept. No. 16 require for *stock* the following material.

Purchasing Order No.
25799

1500 *lbs. Tallow*

H. B. S.........Storekeeper.

May 20 1903 Approved.............................

Storekeeper's Requisition on Purchasing Department.
Size of Slip, 4 by 6 Inches.

FIGURE 52

PURCHASING DEPARTMENT
The Bridgeport Brass Company
BRIDGEPORT, CONN.

ORDER NUMBER MUST BE PLAINLY MARKED ON INVOICE AND PACKAGE

Form 90.

Purchase ORDER NO. 25799 BRIDGEPORT *May 20th*, 1903

To *North Brothers,* For Department 16.
City.

1500 *lbs. Tallow* @ .08 *lb.*

Please Ship *At once.* THE BRIDGEPORT BRASS CO.
Purchasing Department
PER *H. E. S.*

Form of Order Issued by Purchasing Department.
Size of Sheet, 7 by 7½ Inches.

ment reports that the material ordered has been received. The copy is then transferred to a file representing orders filled.

84. *Purchasing department orders.*—Upon receipt by the purchasing department of the requisition of the stores department the order (see Figure 52, page 388) is duly placed with a vendor of the goods, the order form being executed in triplicate, the original purchase order going to the vendor, the duplicate being placed by the purchasing department on the "unfilled" file in the purchasing office, and the triplicate being sent to the shipping and receiving office as authority for the ultimate receipt of the goods into the factory. In some establishments the orders are made in quadruplicate so that the store department may have a copy also, which acts as a notification that the purchasing agent has placed the order. When the material is received by the shipping and receiving clerk a slip is filled out in his office showing the details of material received, this being executed in duplicate, and a notation is made upon the copy of the purchasing agent's order form previously received. The purchasing department is also notified on appropriate blanks of the receipt of the goods, but the triplicate blank is not returned to the purchasing agent until the order is entirely filled. Upon the receipt by the purchasing department of the notification of the receipt of goods, the price and extension is taken from the vendor's invoice, and the fact of receipt of goods, the price and extension are transcribed upon the duplicate copy of purchase order. (See Figure 53, page 390.) When the last shipment is received in connection with the special purchase order annotations are appropriately made upon the blanks and filed among orders filled. As fast as the goods are

FIGURE 53

Purchase ORDER NO....25799.... BRIDGEPORT, *May* 20, 1903.

To....*North Brothers*.... For Department....16........

....*City*..... Stand. Ord. Plant Ord. Prod. Ord.

"*Stock.*"

DUPLICATE.

1500 *lbs.* *Tallow* *at* .08 *lb.*						
5/22	391 *lbs.*	"	"	=		$31.28
"	130 "	"	"	=		10.40
5/29	397 "	"	"	=		41.76
"	150 "	"	"	=		12.00

Total Amount of Bill................

Please Ship..*At once*........ THE BRIDGEPORT BRASS CO.

Received via....*Team*....... Charges................ Purchasing Department

Per *L. E. D.*

Duplicate of Order from Purchasing Department, Filed Under "Unfilled Orders," Showing Subsequent Entries of Material Received. Size of Sheet, 5 by 7½ Inches.

received the blank representing the fact is issued as a memorandum for debits to stores ledger.

85. *Material received and delivered.*—The original material received card (see Figure 54, page 392) is sent to the store department where it is filed with the duplicate requisition, and notations made on triplicate purchase order (Figures 55 and 56, pages 392–393). A partial order receipt is sent to purchasing agent.

The entries that are made on the credit side of the stores ledger representing goods issued have their origin and foundation with the material delivered cards (see Figure 57, page 393) made out by the foreman of the department making requisition for the material. Upon this blank the weight of all material delivered is recorded in the stores department and a receipt obtained from the foreman of the department receiving the goods. The material is then priced, extended, and posted to the stores ledger and is thereupon sent to the factory accounting department to be charged to the proper order number.

86. *Stock in process.*—In the price ledger is kept an account "stock in process." The debits to this account are represented by deliveries of supplies or material by the store department, with charges for labor as represented on the pay roll, both productive and non-productive. The credits to this account are the deliveries to the store room containing finished stock. The difference between the debits and credits of the "stock in process" represents the value of material, labor, and supplies represented in the process of manufacture. There is an account kept with "finished stock," and this account is in its turn debited when the "stock in process" account is credited with articles transferred. The

FIGURE 53

Purchase ORDER NO....25799....

To....*North Brothers*....

....*City*.....

BRIDGEPORT, *May* 20, 1903.

For Department....16........

Stand. Ord. Plant Ord. Prod. Ord.

"*Stock.*"

Form 29 ... 13)
1903

...eiving Department, Corre-
... Triplicate Purchase Orders,

...DGEPORT *May 20th*, 1903.
...r Department 16
...rd. Plant Ord. Prod. Ord.

... BRIDGEPORT BRASS CO.
Purchasing Department
PER *H. E. S.*

... Entered on Triplicate Purchase

FIGURE 56

PURCHASE ORDER NO. 25799	PARTIAL RECEIPT
	BRIDGEPORT, 5/22/03

From *North Bros., City*

391 *lbs. tallow* @ .08=$31.28

Received Via *Team*

Charges..............

Partial Order Receipt Sent to Purchasing Department. Size of Sheet, 5 by 8 Inches.

FIGURE 57

Order No. 903	To Department 28	$\boxed{S}$ Foreman	Date 5/8 1903

Quantity	Description		Value	
374 *lbs.*	*tallow*	@ .08	29	92

Delivered 5/8/'03	Received by 28 *M.S.*

Only one item on a card.

MATERIAL DELIVERED CARD

Material Delivered Card, Covering Deliveries by Stores Department, Made Out by Foreman of Department Requisitioning the Material and Filled in by Stores Department. Size of Slip, 4 by 6 Inches.

credits to finished stock, of course, represent sales and deliveries to customers. The balance of this account will be the amount of salable stock on hand. To enable the corporation to figure intelligently upon business which is offered for competition, various blanks are provided to conform to the nature of the business manufacturing.

Figure 58, which appears below on this page, represents the form used by the estimate clerk in arriving

FIGURE 58

Est. No. 700

Article *Plate*
Discount..................%   Per M. in lots of 20M.

Stock	Mixture	Temper	Gauge	Width	O. D.	I. D.	Shape
Brass	*H. B.*	*Hd.*	.135	$\frac{31}{32}$ in.			

Gross Weight	105 lb. @ .143	=	15 07	Total	
Scrap 24%	25 " " .09	=	2 25	12	77
Net Weight	80 " "	=			

Dept.	Operations	T. S.	M. S.	C. I.	Hrs.	Tools		Supplies		Labor			
No.													
33	*Pierce & Part.*	5		50	50	29	00				08		
38	*Polish. Edges*										60		
36	*1st Countersink*			6	5	3	00				35		
"	*2nd "*										30		
						32	00			1	33		

Form of Estimate on One Part of a Special Job. Size of Sheet, 5 by 8 inches

at the approximate cost of the various parts of the article to be figured on. The work represented by Figure 58 on this page is a plate and Figure 59 on page 395 a stud, both of which are shown in Figure 63, page 398, which contains a drawing of the parts. Figure 60, page 395, is the estimate of the foreman as to the operations upon each part. Each foreman makes an estimate of the work to be performed in his particular department, and keeps a duplicate of such estimate, as shown in Figure 60, for his guidance if the estimate

FIGURE 59

Est. No. 700........

Article....*Stud*..

Discount..................% Per M. in lots of 20*M*................

Stock	Mixture	Temper	Gauge	Width	O. D.	I. D.	Shape
Rod	*L'd B.*		$\frac{29}{64}$				

Gross Weight..........21...lb. @...15...=...........3|15
Scrap 33%.............7... " "...09...=............|63
Net Weight...........14... " "........=............|..

TOTAL 2|52

Dept.	Operations	T. S.	M.S.	C. I.	Hrs.	Tools	Supplies	Labor
..36..	*Machinery*.....							.34
..36..	*Separating*.....							.08
								.42

Form of Estimate on the Stud, Another Part of the Special Job. Size of Sheet, 5 by 8 Inches.

FIGURE 60

Date *June* 1/'03 Foreman's Estimate Blank Dept. No. 33

CUSTOMER'S NAME	ARTICLE OR PART *Plate*
John Brown	EST. NO. 700
	ART. NO.

METAL	OPERATIONS	Estimated Cost per M.	Actual Cost per M.
Gross Weight..105 *lbs*...	*Pierce & Part*..............	......08......	....
Scrap " ...25.....			
Finished " ...80.....			
Quality...*H.B*.........			
Gauge..135...........			
Width...31/32".......			
Temper...*H'd*.........			
Length..............	*J.H.W*		

Foreman's Estimate of Operations on Each Part and Estimated Cost. Size of Slip, 4 by 6 Inches.

combined with the other estimates, results in an order. The estimate clerk's form (see Figure 58, page 394), is made up based upon the information given by the foreman in Figure 60, page 395.

87. *Assembling and recapitulation sheets.*—Figure 61, page 397, is the estimate of the cost of assembling for work where the article consists of more than one part. Figure 62, page 397, is a recapitulation sheet including the operations in connection with the plate, stud, the assembling, direct labor, factory expense, supplies and tools. The basis of factory expense item is necessarily the preceding year's actual expenditure. The estimate from Figure 62 is transcribed to Figure 63, page 398, which shows a cut of the article upon which quotations are made.

88. *Quotation card index.*—The quotation card, (See Figure 64, page 398) shows the figures decided upon based upon the costs as set forth in the various forms previously shown, plus the margin for commercial expenses and profit. All of the forms thus far shown bear the same estimate number; in the particular case illustrated No. 700.

89. *Order system.*—It is assumed that the estimate results in an order, and in that case, a blank (see Figure 65, page 399) is filled out in triplicate and information posted to it from the copy of the quotation card (See Figure 64, page 398). The original blank is retained in the order department and the other two copies are sent to the finished stores department, one copy being filed there, and the other with the shipping clerk, who makes appropriate notations with respect to the filling of the shipment. These notations are made also upon the duplicate held by the foreman of the finished stores department.

FIGURE 61

ASSEMBLING — Est. No. 700

Dept.	Operations	T. S.	M. S.	C. I.	Hrs.	Tools		Supplies		Labor	
36	*Assembling*	2			6	4	00				50
38	*2nd Polish*										80
39	*Dip & String*										17
29	*Lacquer*										10
14	*Inspect*										05
	Supplies								20		
	Case								25		
						4	00		45	1	62

Assembling Sheet to Cover Cost of Assembling Several Parts of Job. Size of Sheet, 5 by 8 Inches.

FIGURE 62

Article *Brass Parts to sple* — Est. No. 700

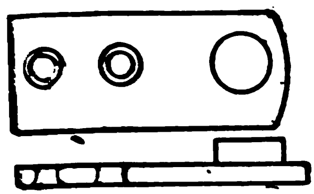
Parts	Tools		Supplies		Labor		Net Metal	
Plate	32	00			1	33	12	77
Stud						42	2	52
Assembling	4	00		50	1	62		
	36	00		50	3	37	15	29
			Direct Labor				3	37
			Factory Expense				3	70
			Supplies					50
							22	86
			Tools per M				1	80
							24	66

Recapitulation Sheet, Showing Cost of Article, Including Factory Expenses and Cost of Tools. Size of Sheet, 5 by 8 Inches.

FIGURE 63

[illegible] [illegible]		ESTIMATE
[illegible] [illegible] *Lacquered on one side.*		*No.* ....700....
[illegible] [illegible] @ 24.66 per M.	Gross Weight 126 lb.	18.17 per M.
[illegible] " 22.86 " "	Scrap 25%.. 32 "	2.88 " "
[illegible] ....@......per M.	Net Weight. 94 "	15.29 " "
[illegible] ....".......... " "		

[illegible]—DESCRIPTION



[illegible] per M. unless otherwise specified.

[illegible] of Estimate on Basis of Which Quotation is Made. Size [illegible] inches.

FIGURE 64

[illegible]	................6/11/03...............
[illegible]	................*Est. F*-700. ....
	....
[illegible]	....
[illegible]	$30.00 *M*..................
[illegible]	28.00 *M*..................

[illegible] Copy of Quotation. Size of Card, 3 x 5 inches.

FIGURE 65

Date O 6/11 Customer's No. and Date 1323 O 6/9/03	Sold to *John Brown,* Address *New Haven, Conn.* Ship via *Freight.* Ship to *Him.*	F 1300 Terms

Pkgs.	Pkg. No.	Production No.	Quantity	Material	List	Dis.	Amounts	Total
			20,000	*Brass Parts to Sample.* *Est. No.* 700	$30	M.		

Manner in Which Order When Received is Entered. Size of Sheet, 5 by 8 Inches.

FIGURE 66

Department 14—Packing Room

Date. .*June* 11. .1903

Requisition for Order No. . .2000. .for

....

.......................20,000 *Brass Parts to Sample*.......................

....

...............................*Est. No.* 700...............................

....

....

....

.....................*F. H. M*......Foreman

Requisition on Superintendent for Parts of Articles Ordered. Size of Slip, 4 by 6 Inches.

90. *Requisitions on superintendents.*—If the goods are not kept in stock a requisition is made by the finished stores department upon the superintendent (see Figure 66, page 399), a copy of which the foreman keeps. Upon the receipt of the requisition (see Figure 66, page 399) the original estimate is consulted and the various production orders are given.

91. *Production orders.*—Figure 67, page 401, is the original production order issued by the superintendent, and Figure 68, page 401, is the duplicate retained in the superintendent's office. If there are several parts of the article to be manufactured, several originals are made and distributed to the various departments concerned in the manufacturing operation. These orders are made with the use of carbons and are necessary in order that each foreman may have an opportunity to plan intelligently the work of his department in anticipation of being required to actually perform the service. Figure 69, page 402, shows the back of the duplicate production order, this form being used for accumulating costs only when the article is composed of a single piece. In the department where the first operation occurs the material is posted, the material receipts of all other departments being shown by the performance reports of the previous department. A transfer slip represents the goods delivered by one department to another.

92. *Delivery slips to departments.*—This is shown in Figure 70, page 403. The foreman consults his original estimate, (See Figure 60, page 395) with the price shown upon the duplicate of the order which is issued to him based upon Figure 68, page 401. Figure 71, page 403, shows piece rate cards with the price paid for each operation. Where a discrepancy exists between the estimate as originally made for piece work

FIGURE 67

Production Order No. 2000-*A*	To Department No. 33	Date of Order *June* 10, 1903

Please execute the following order, returning the order on completion of the work to the superintendent. Charge all labor and material to the above production order number.	In case you find it impossible to produce this order at prices noted below, report to superintendent before commencing the work.

Kind of Metal	Lbs. Ordered	Width	Gauge	Length	Temper	Remarks
H. B.	2100	$\frac{11}{16}$″	.135		*Hard*	

Date Rec'd	Pounds	Quantity		Operations	Price Per M.
June 12	2100				
		20*M*	*Brass Plates* *Est. No.* 700	*Pierce & Part*	.08
			John Brown		
SCRAP					
Date Ret'd	Pounds				
June 20	500				
Excess	Metal		Date Completed *June* 20, '03 — Approved *B. S. S.* Supt.		
To be completed by date as below *June* 20–03					

Original Production Order Issued by Superintendent. Size of Sheet, 5 by 8 Inches.

FIGURE 68

Production Order No. 2000-*A*	To Department No. 33-36-38-29-14	Date of Order *June* 10, 1903

Please execute the following order, returning the order on completion of the work to the superintendent. Charge all labor and material to the above production order number.	In case you find it impossible to produce this order at prices noted below, report to superintendent before commencing the work.

Kind of Metal	Lbs. Ordered	Width	Gauge	Length	Temper	Remarks
H. B.	2100	$\frac{11}{16}$″	.135		*Hard*	

Date Rec'd	Pounds	Quantity		Operations	Price Per M.
June 12	2100				
		20*M*	*Brass Plates* *Est. No.* 700	*Piecre & Part*	.08
			John Brown		
SCRAP					
Date Ret'd	Pounds				
June 20	500				
Excess	Metal		Date Completed *June* 20, '03 — Approved *B. S. S.* Supt.		
To be completed by date as below *June* 20, '03					

Duplicate Production Order Issued by Superintendent, Showing Departments through Which it Passes. Size of Card, 5 by 8 Inches.

U. P. M.

Metal % Supplies	Factory Expense @
Total Material	Total Labor and Factory Expense
For S. O.	Aggregate
Approved	

Back of Duplicate Production Order Which is Used for Accumulating Costs When the Article Consists of a Single Piece.

FIGURE 70

ORDER No....2000-*A*.... ....*June* 12....1903

Name of Article....*Brass Plates*.................. ....

...10*M*....Pieces ....800....Lbs. ....12½....Pieces per Lb.

Delivered to Department No....36......................................

From Department No....33...........

By....*G. B*................

Transfer Slip, Showing Deliveries by One Department to Another. Size of Slip, 4 by 6 Inches.

FIGURE 71

Date *June* 12, 1903 CHANGE IN PIECE RATE Dept. No. 33......

Article..*Brass Plate*........ No...1400.....

Operations	Old Price	New Price
Pierce & Part................................	....	.....09.....
....	....	....
....	....	....
....	....	....

Approved....*B. S. S*.... Supt. O ....*C. A. B*....Foreman

Piece Rate Card, Showing Price Paid for Operation. Size of Slip, 3 by 5 Inches.

and the price which it has been found necessary to pay, the documents representing the facts are laid before the superintendent of the factory for his approval.

93. *Production order memoranda.*—Figure 72, page 405, shows the record kept by the foreman of each department through which the work passes. If the production order is 2000, the one issued to department 33 may be 2000-a, to department 34, 2000-b, etc. Each foreman files this record with his copy of the order based upon Figure 67, page 401. The foreman keeps his records posted from the labor cards to the record card (see Figure 73, page 406) and to the back of the production order (see Figure 74, page 407). Notations are also made on the original production order based upon Figure 67, page 401.

94. *Index register of manufactured articles.*—Figure 75, page 408, is a form for card index register of manufactured articles kept by the estimating clerk, and is an accurate record of tools, metal and labor operations for all articles manufactured. Every article has a symbol and number. Where an article is composed of more than one part, such as the one illustrated, the completed article would be given a number such as 1400, as shown in Figure 75, page 408. The plate being one part would be given number 1400-a, as shown in Figure 76, page 408, and the stud, number 1400-b, as shown in Figure 77, page 409. The assembling operations would be represented by number 1400-c, as shown in Figure 78, page 409. Figure 79, page 409, gives the record on file in a department where there is only one operation performed, as on the plate, and none on the stud. Figure 80, page 410, consists of the change factory register to notify the superintendent and estimating clerk of any change in method

FIGURE 72

Production Order No. 2000-*A*	Department No. 33	Date of Order *June* 10–'03	Register No. 1400

	Scrap	
	Date Ret'd	Pounds
20M Brass Plates *Est. No.* 700	*June* 20	500

Production Order Record Kept by Foreman of Department. Size of Card, 5 by 8 Inches.

Figure 73

Pierce & Part.

Date	Pounds	Pieces per Lb.	No. of Pieces	Date	Pounds	Pieces per Lb.	No. of Pieces	Date	Pounds	Pieces per Lb.	No. of Pieces	Date	Pounds	Pieces per Lb.	No. of Pieces
June 12	800	12½	10,000												
" 15	400	"	5,000												
" 20	400	"	5,000												
	1,600		20,000												

Back of Production Order Record (Fig. 24), Showing Deliveries Made by the Department on the Order. Size of Card, 5 by 8 Inches.

FIGURE 74

OPERATION	Date	Pounds	Pieces per Lb.	No. of Pieces	To Dept.	REMARKS
Pierce & Part	*June* 12	800	12½	10,000	36	
	" 15	400	12½	5,000		
	" 20	400	12½	5,000		
		1,600		20,000		

Manner in Which Deliveries on the Order as Entered on Production Order Record (Fig. 24) Are Also Entered on Back of Original Production Order (Fig. 19). Size of Sheet, 5 by 8 Inches.

FIGURE 75

1400

GENERAL DESCRIPTION OF ARTICLE NUMBER

Brass Plate to Sample

A — *Plate*

B — *Stud*

C — *Assembling*

O

Card Index Register of Manufactured Article No. 1400. Size of Card, $4\frac{1}{4}$ by 6 Inches.

FIGURE 76

A

ARTICLE *Brass Plate*								Gross Wt. 105 *lbs.* Net Wt. 80 *lbs.*
Stock *Brass*	Mixture *H. B.*	Temper *H'd*	Gauge .137	Width $\frac{11}{16}''$	O. D.	I. D.	Shape	

No.	Operation	Dept. No.	Tool No.	Piece Price	No.	Operation	Dept. No.	Tool No.	Piece Price
1	*Pierce & Part*	33	27	08	14				
2	*Polish Edges*	38		60	15				
3	*1st Countersink*	36	30	35	16				
4	*2nd*	36	30	30	17				
5					18				
6					19				
7					20				
8					21				
9					22				
10					23				
11					24				
12					25				
13					26				

Card Index Register (1400 A) of One Part of Article. Size of Card, 4 by 6 Inches.

Figure 77

B

ARTICLE *Stud*

Stock	Mixture	Temper	Gauge	Width	O. D.	I. D.	Shape	Gross Wt. / Net Wt.
Rod	*L'd B*		$\frac{23}{64}$"					21 *lbs.* / 14 *lbs.*

No.	Operation	Dept. No.	Tool No.	Piece Price	No.	Operation	Dept. No.	Tool No.	Piece Price
1	*Machining*	36		.34	14				
2	*Separating*	36		.08	15				
3					16				
4					17				
5					18				
6					19				
7					20				
8					21				
9					22				
10					23				
11					24				
12					25				
13					26				

Card Index Register (1400 B) of Another Part of Article. Size of Card, 4 by 6 Inches.

Figure 78

C

ARTICLE *Assembling Plate Stud*

Stock	Mixture	Temper	Gauge	Width	O. D.	I. D.	Shape	Gross Wt. / Net Wt.

No.	Operation	Dept. No.	Tool No.	Piece Price	No.	Operation	Dept. No.	Tool No.	Piece Price
1	*Assembling*	36	77	.50	14				
2	*2nd Polish*	38		.80	15				
3	*Dep. & String*	29		.17	16				
4	*Lacquer*	29		.10	17				
5	*Inspect*	14		.05	18				
6					19				
7					20				
8					21				
9					22				
10					23				
11					24				
12					25				
13					26				

Card Index Register (1400 C) of Another Part of Article. Size of Card, 4 by 6 Inches.

Figure 79

A

ARTICLE *Brass Plate*

Stock	Mixture	Temper	Gauge	Width	O. D.	I. D.	Shape	Gross Wt. / Net Wt.
Brass	*H. B.*	*H'd*	.137	$\frac{11}{32}$"				105 *lbs.* / 80 *lbs.*

No.	Operation	Dept. No.	Tool No.	Piece Price	No.	Operation	Dept. No.	Tool No.	Piece Price
1	*Pierce & Part*	33	27	.08	14				
2	*Polish Edges*	38			15				
3					16				
4					17				
5					18				
6					19				
7					20				
8					21				
9					22				
10					23				
11					24				
12					25				
13					26				

Card Index [illegible] ving Record on File in Department No. 33.

FIGURE 80

"CHANGE" FACTORY REGISTER	No. 1400

This Article has been changed from its former description to the following:

Name *John Brown* Date *June* 12, 1903

ARTICLE *Brass Plate*					BLANK			Gross Weight
Stock	Symbol	Temper	Gauge .137	Width	O. D.	I. D.	Shape	Net Weight

Operation	Dept. No.	Piece Price	Operation	Dept. No.	Piece Price
....	33	....	....	......	......
....	....	....	....	......	......
........135 *Gauge would be*	*too light*	*for requir*	*ed weight per M*	......	......
....	....	....	....	......	......
....	....	....	....	......	......
....	....	....	....	......	......
....	....	....	*C. A. B.*		Foreman

Change Factory Register Slip Notifying Superintendent and Estimating Clerk of Change in Method of Manufacture. Size of Slip, 4 by 6 Inches.

Figure 81

MAN NO. 1550	DEPARTMENT 33	DATE *June* 12, 1903
NAME *John Doe*		ORDER NO. 2000 A
QUANTITY Lbs. 800	DESCRIPTION OF WORK *Brass Parts Reg. No.* 1400A	
No. to Lb. 12½		
Pieces 10,000		
OPERATION.		

OPERATIONS.	
Cupping	Blanking
Drawing	Piercing & Part
Trimming	Reducing
Rolling	Cut-Off
Beading	Bending
Knurling	Draw Down
Closing	Sizing
Ribbing	Draw Through
Saw	Forming
Stamping	Inspecting
Draw & Reduce	
Reaming	
Burring	

6	½	/	½	8	½	9	½	10	½		½		12	DAY
x	½	1	½	2	½	3	½	4	½	5	½	6		

TIME	PIECE	APPROVAL	HOURS	RATE	VALUE
		C. A. B.	4	.09	90

Direct Labor Card, Showing Workman's Time and Rate of Wages on One Part. Size of Slip, 4 by 6 Inches.

of manufacture by eliminating or adding operations. In this system the costs of manufactured articles are posted to order numbers which are of three series; plant orders, standing orders, and production orders.

95. *Direct labor cards.*—Figure 81, page 410, shows a form of direct labor card of different colors for various departments. This card is filled in by the workman, who indicates by an appropriate check or mark the operation performed, the time the job was commenced and finished. This card is delivered to the clerk or the foreman for additional information, including the order number, weight of material, etc. The paymaster receives these cards daily and "prices" them from the data found on piece rate cards (see Figure 71, page 403).

96. *Cost analysis sheet.*—Figure 82, page 412, is a cost analysis sheet for the accumulation of the charges for productive labor. One sheet is used for each article or part of an article made, and shows the estimate number, register number, the piece work prices and the operations. To these cards, the labor cards are posted daily. Figure 83, page 413, represents a form made out by the cost clerk where differences exist between the price on the cost sheets and labor cards, or where operations are shown that are not listed on the cost sheet. The information on this slip is sent to the superintendent daily, for administrative purposes and to keep him constantly informed of actual costs during the process of manufacture.

97. *Non-productive expense record of indirect labor.*—Figure 84, page 414, represents indirect labor expenses, being all labor not charged direct to production orders. Figure 85, page 415, represents sheets ruled and cross-ruled to show accumulation of costs of indirect labor, illustrating the manner in which indirect

OPERATION [illegible]

OPERATION [illegible]

OPERATION [illegible]

NAME OF ARTICLE *Brass Plate* *Pat. No. 700*

ORDER NO. [illegible]

Cost Analysis Sheet, Bringing Together Productive Labor Charges on One Operation. Size of Sheet, 8 by 10 Inches.

FIGURE 83

"CHANGE" FACTORY COST.

ORDER NO. ....*2000-A*......

Date

NAME....*John Brown*.. ....*June* 13, 1903................

ARTICLE....*Brass Plate*..

The cost of making this article has been increased / decreased as follows:

Dept.	Pieces.	Operation.	Est. or Reg. Cost per M.	Actual Cost per M.	Net Loss or Gain
33	10 *M.*	*Pierce & Part*	.08 *M.*	.09 *M.*	.10
				Signed	

REPORT

It was necessary in order to get these parts out on time to do this operation on a slower machine than one taken into consideration in making estimate.

Signed......*C. A. B.*...................... Noted....*B. S. S.*..........Supt.

Change Factory Cost Slip for Superintendent, Showing Change in Estimated Cost. Size of Sheet, 5 by 8 Inches.

FIGURE 84

Man No.	Department	Date	Order No.
1720	44	*June* 25, 1903	
Name: *Hubert Burr*			*P. O.* 990

Quantity	Description of Work.
	Machine No. 320 *Dept.* 33
Operation.	

Expense.	
Foreman	Making
Timekeeper	Repairing
Weigher	Cut-Off
Trucking	Hardening
Sweeping	Annealing
Oiling Machinery	Dressing
Cleaning	Grinding Rolls
Setting Tools	Grinding
Elevator	Planing
Clerical	Milling
Casing	Welding
Marking	Forging
Counting	Packing

6	½	/	½	8	½	9	½	10	½	11	½	▮	12	DAY
x	½	1	½	2	½	3	½	4	½	5	½		6	

Time	Piece	Approval	Hours	Rate	Value
		A. P. D.	4 | 45	.30	1 | 42

General Expense Card Covering Labor Not Charged to Production Orders. Size of Slip, 4 by 6 Inches.

labor is charged from labor cards to standing order numbers and subdivided to the subsidiary departments. The letters "O. D." indicate "other department" expenses.

98. *Plant orders.*—Figure 86, page 416, represents a plant order issued in duplicate by the cost department on the request of the superintendent. Figure 87, page 416, shows the reverse of 86 with charges against standing orders for labor and material. The total charges to plant and standing orders, as shown by Figures 85, 86 and 87 are transferred to sheets similar to Figure 85 but headed with department numbers, as shown in Figure 88, page 417.

99. *Indirect labor charges.*—The heading "own charges" indicates an expense in the department only, O. D. charges being made by other departments. To illustrate the use of the information the figures obtained, SO520 on Figure 88, should be compared with the totals

FIGURE 85

May, 1903	Week ending	Gen'l Unclass	O.D. for D. 29	O.D. for D. 30	O.D. for D. 33	Dept 33 S.O. 520
	May 2	14 78			26 00	10
	" 9	19 79	22		24 60	25
	" 16	17 98	1 72		12 30	30
	" 23	21 69	1 13	30	11 08	25
	" 30	14 48		33	27 70	25
Totals		88 72	3 07	63	101 68	1 15

Manner in Which Indirect Labor Is Charged from Labor Cards to Standing Order Numbers and Subdivided to the Various Departments. Size of Sheet, 24 by 10 Inches.

FIGURE 86

PLANT ORDER NO. 990	TO DEPARTMENT 21	DATE OF ORDER *June 20, '03*

Please execute the following order, returning the order on completion of the work to the Superintendent.
Charge all material and labor to the above plant order number.
Work to be done for..*S. O. 520*.... Department..*33*....

DATE COMPLETED, *June 28, '03*

..................*Repair Power Press No. 320*..................

..............................*Out of alignment*..............................

To be completed by date as below. Approved
...........*June 29, '03*............ ....*B. S. S.*...........

Supt.

Plant Order for Repairs. Size of Slip, 4 by 6 Inches.

FIGURE 87

1903	Material	Value		1903	Labor	Hrs.	Value	
Date				Date				
June 20	*6 lbs. Cast Iron*......	....	30	*June* 21	*Repairing*..........	7	2	10
				" 28	"	20	6	00
					Factory Expense @ 25%.....		2	03
Total Material	....		30	Total Labor and Factory Exp..			10	13
For S. O. *No.* 520........				Aggregate..............			10	43

Back of Plant Order, with Charges Against Standing Order No. 520 for Labor and Material.

for the same departments in Figure 85, $1.15. Figure 89, page 418, shows the charges to various manufacturing departments grouped by months to facilitate comparison from month to month of various items of expenses.

100. *Monthly statement of costs.*—Figure 90, page 419, is a monthly statement of the cost of running the

Figure 88

	Dept. 30 S. O. No.	Dept. 30 Sun. Charges	Dept. 30 O. D. Charges	Dept. 30 Supplies	Dept. 33 S. O. No.	Dept. 33 Sun. Charges	Dept. 33 O. D. Charges	Dept. 33 Supplies
	20				20		26 82	117 72
	22		65		22		6 46	1 37
	35			1 63	35		2 10	39
	40				40			5 25
	41		12 59	1 45	41		219 40	25 03
	42				42			
	501				501			
	510		2 17	2 02	510		17 81	
	520		63	3 66	520	1 15	101 68	26 33

Manner in Which Indirect Labor Charges to the Different Standing Order Numbers Are Grouped to Departments. Size of Sheet, 24 by 10 Inches.

	Indirect Labor Own	Indirect Labor O. Depts.	Supplies	Total		Indirect Labor Own	Indirect Labor O. Depts.	Supplies	Total	Mfg. Depts.	
	[illegible]					Alterations to Tools					
Jan.		74 [illegible]	6 06	80 09			63 61	4 08	67 69		
Feb.		96 75	11 62	108 37			78 54	2 19	80 73		
Mar.		100 19	36 22	136 41			26 49	16 84	43 33		
Apr.		106 67	7 16	113 83			32 52	21 54	54 06		
May		81 41	4 62	86 03			30 52		30 52		
June	1 00	135 88	8 16	145 04			159 87	30 95	190 82		

Monthly Analysis and Summary of Indirect Labor Charges in the Various Departments. Size of Sheet, 24 by 10 Inches.

FIGURE 90

FACTORY EXPENSE REPORT, Dept. *Mfg.*, Month ending *June* 30, 1903

Pay Roll Balance.

Prod. Labor Own,		$10,000.00
Prod. Labor Charges to O.D.,		14.00
Expense Labor Own,		6,000.00
Expense Labor Charges to O.D.,		24.00
" Salaries Own,		400.00
........Balance,		10.00
Department Pay Roll,		$16,448.00
Prod. Labor Charges by O.D.,		20.00
Expense " " " O.D.,		2,100.00
Perm. Inv. " " O.D.,		50.00
Gross Factory Pay Roll,		$18,618.00
Prod. Labor Charges to O.D.,	$14.00	
Expense " " " O.D.,	24.00	
Total " " " O.D.,		24.00
Net Pay Roll,		$18,594.00

Factory Expense Recapitulation.

Expense Labor (Own)	$6,000.00
" Salaries (Own)	400.00
" Labor (O.D.)	2,100.00
" Accounting (Office Pay Roll)	300.00
" Charges of *Dept.* 26	12.00
" " " *Dept.* 27	10.00
" Supplies,	1,000.00
" " S.O. 904	25.00
Total Factory Expense	$9,847.00
Prod. Labor (Own) † Prod. Labor by O.D.—Prod. Labor to O.D.=	10,006.00

Total Factory Expense = $98\frac{4}{10}$% of Prod. Labor.
Prod. Pay Roll for 12 mos. ending *June* 30 = $100,000.
Expense " " " " " " *June* 30 = 110,000.
Average Factory Expense for 12 mos. ending June 30 = 110%.
All Standing Orders included in Factory Expense, except S.O. 1-10-20.
Prod. = Productive.
O. D. = Other Departments.

Monthly Report of Cost of Running the Manufacturing Departments. Size of Sheet, 8 by 10 Inches.

manufacturing department, showing the percentage of factory expenses applicable to the productive labor. The productive labor item is obtained from Figure 82, the factory expense items from Figure 88. Figure 91 below is the form in which manufacturing costs are

FIGURE 91

FACTORY COST NO. ...700....

Article. .*Brass Parts to sple*.......

Parts	Tools	Supplies	Labor	Net Metal
Plate	32 00	..	1 33	12 77
Stud	..	..	42	2 52
Assembling	4 00	50	1 62	..
	36 00	50	3 37	15 29
	..	*Direct Labor*	..	3 37
	..	*Factory Expense*	..	3 70
	..	*Supplies*	..	50
	..		..	22 86
	..	*Tools per M*	..	1 80
				24 66

Form in Which Manufacturing Costs Are Entered and Filed for Reference.

filed and entered for reference. The item of material is supplied from the information shown in Figure 67, the direct labor from Figure 82, the average factory expenses from Figure 90.

101. *Entries for commercial accounting department.*—Figure 92, page 421, is a journal voucher debiting the general sales and crediting "stock in process," representing total cost of shipments reported to the commercial accounting department.

Mr. Guy P. Miller gives credit for laying the foundation of the above system to Gunn, Richards & Co., Production Engineers, 30 Pine Street, New York.

FIGURE 92

Journal Voucher — Date *June* 30, 1903 — J.V. No. 1217

AUTHORITY	ACCOUNT	CARD	DEBIT	CREDIT
John Smith	Debit—*Sales General*		$75,000 00	
Head of Cost Dept.	Credit—*Stock in Process*			$75,000 00
	Cost of all shipments of			
	manufactured goods			
	during the month ending June 30, '03			

Journal Voucher Giving to Commercial Accounting Department Cost of Manufactured Goods Shipped.

Figure 89

1903	1903	S.O. 522 Indirect Labor Own	Rep. to Mach. Indirect Labor O. Depts.	Accessory Tools Supplies	Total		S.O. 528 Indirect Labor Own	Alterations to Tools Indirect Labor O. Depts.	Supplies	Total	Mfg. Depts.	
	Jan.		74 03	6 06	80 09			63 61	4 08	67 69		
	Feb.		96 75	11 62	108 37			78 54	2 19	80 73		
	Mar.		100 19	36 22	136 41			26 49	16 84	43 33		
	Apr.		106 67	7 16	113 83			32 52	21 54	54 06		
	May		81 41	4 62	86 03			30 52		30 52		
	June	1 00	135 88	8 16	145 04			159 87	30 95	190 82		

way and the structures built thereon, such as would be utterly inappropriate if the purpose of the expenditure was to create something representing additional earning capacity. When once the road has been originally properly equipped, items thereafter necessary to maintain the property in its state of efficiency are appropriate to be charged to this account. The subdivisions under this head are:

Superintendence.

Salaries of officers and clerks engaged in this maintenance work, and their appropriate office and other expenses.

Ballast.

Expenses incident to purchase or production of ballast.

Ties.

Cost of ties in maintenance supplied for renewal, including inspection.

Rails.

Cost of rails for maintenance less the value of old rails taken up.

Roadway and track.

Applying ballast, ties, rails and other track material and track maintenance, including care of roadbed, general cleaning, etc.

Removal of snow, sand and ice.

All expenses incurred in cleaning tracks, including supplies, to effect such maintenance accounts.

Tunnels.

Cost of repairing tunnels, including cost of labor, timber and other material.

Bridges, trestles and culverts.

Cost of material used (less salvage) and labor in repairing and renewing these structures.

Over and under grade crossings.

Cost of material and labor for repairing and renewing these features of way and structures.

Grade crossings, fences, cattle guards and signs.

Material and labor for renewing and repairing, used in maintenance of crossings at grade, fences and cattle guards.

Signals and interlocking plants.

Cost of material (less salvage), labor expended in repairing and renewing such appliances.

Telegraph and telephone lines.

Cost of material and labor in repairing and renewing lines owned by the carrier, including all appurtenances.

Buildings, fixtures and grounds. (Used in operation.)

Expenses incidental to repairing and renewing buildings and fixtures and maintaining driveways.

Docks and wharves, used in operation.

Cost of material and labor of repairing and renewing docks, wharves, piers, ferry slips, transfer bridges, etc.

Roadway tools and supplies.

Cost of such items and of repairing, renewing and operating tools for maintenance operations.

Work equipment.

Repairs. Cost of material and labor used in repairing, painting and lettering work equipment.

Renewals. This account includes the value of equipment condemned and destroyed or sold, less amount previously charged for depreciation and less scrap value of salvage.

Depreciation. This account includes a monthly charge to operating expenses to provide a reserve fund for replacement.

Injuries to persons.

Cost of items incident to injuries when caused directly in connection with maintenance of way and structures.

104. *Maintenance of equipment.*—The finest line of cleavage is observed between expenditures for "maintenance of way and structures" and "maintenance of equipment," which covers rolling stock of the road. It

is of the most vital importance that items appropriate for maintenance of equipment should invariably reach that account through its proper and appropriate subdivisions, which are:

Sub-accounts:

Superintendence.

This account includes the cost to the road for the salaries of all officers, agents, or officials engaged in the maintenance of equipment department, including the pay of clerks and attendants, and the office and other expenses incident to this subdivision.

Steam locomotives.

Repairs. This account includes the cost of material, less salvage, and labor in repairing steam locomotives, tenders and fixtures, including cost of cutting up condemned locomotives and tenders.

Renewals. This account includes the original cost or purchase price of steam locomotives condemned, destroyed or sold, less an amount previously depreciated, and less scrap value of salvage and the amount received for this equipment when retired.

Depreciation. This account includes a monthly charge of one-twelfth of the per cent per annum prescribed by the Interstate Commerce Commission, to provide a reserve fund for replacement when the equipment is retired.

Passenger train cars.

Repairs. This account includes cost of material, less salvage, and labor in repairing, painting, varnishing, finishing and lettering incidental to all classes, including furniture and fixtures and all hand tools used in connection with this subdivision.

Depreciation. This account includes the monthly charge for the creation of a fund for replacement as heretofore set forth under locomotives.

Freight train cars.

Repairs. This account includes cost of material, less

salvage, and labor in repairing freight train cars, including painting and lettering and all kindred expenses.

Renewals and depreciation. The items to be included under renewals and depreciation of freight train cars are similar in character to those provided for the same items under locomotives and passenger train cars.

Electric equipment of cars.

Repairs. This account includes cost of material used and labor expended in repairing and renewing motors affixed to cars, and their connections, including all appliances making up the electric equipment of cars.

Floating equipment.

Repairs. When steamboats and tug boats are not included in the account known as "outside operations," this account includes cost of material and labor in repairing steamships, steamboats, power launches, tugs, etc., and all machinery, fixtures and other parts connected therewith.

Shop machinery and tools.

This account includes cost of repairs and renewals for machinery and tools, including the material and labor expended thereon.

Power plant equipment.

Cost of materials, less salvage, and labor in repairing and renewing steam, water plant and electric plant equipment, appliances and fixtures.

Injuries to persons.

This account represents expenses expended to injuries when caused directly in connection with maintenance of equipment.

Stationery and printing.

This account includes cost of the stationery used strictly in connection with maintenance of equipment.

Insurance.

This account includes premiums paid by the railway company to its insurance fund and to insurance companies, in all cases where the loss or damage for any reason would be chargeable to maintenance of equipment.

105. *Traffic expenses.*—The details of the third subdivision, "traffic expenses," are provided to be grouped under that head in order that the expense of securing traffic may be separated from the expense of conducting traffic. This information for administrative guidance is as vital, in connection with the railway transportation as in connection with other commercial activities. The subdivisions affecting this general account are:

Superintendence.

This account includes the cost to the railway company of such items as the pay of officers and agents engaged in the preparation and distribution of tariffs, classifications and rate sheets, and in administering traffic, including pay of clerks and attendants, and office and other expenses incident to securing traffic.

Outside agencies.

This account includes the pay and expenses of the various agencies engaged in soliciting traffic, including traveling expenses and the disbursement to solicitors, and all other expenses appertaining to securing business through these channels.

Advertising.

This account includes the pay and expenses of advertising agents and the cost of the printed matter for general distribution, and other kindred expenses for attracting traffic.

Traffic associations.

This account includes the cost to the railway company of items of expense incurred on account of traffic associations of railway officials, including membership fees in commercial bodies.

Fast freight lines.

Items under this classification are expenses of fast freight or dispatch organizations.

Industrial and immigration bureaus.

Items of salaries and expenses of industrial and immigration agents and their subordinates, cost of exhibits and all kindred expenses, including expenses of experimental farms and donations to expositions, when such expenses are incidental to the upbuilding of traffic other than those provided for in the above account of advertising.

Stationery and printing.

This account includes the items under this class used in connection with traffic expenses.

106. *Transportation expenses.*—The next account in the order of the prescribed classification of operating expenses is "transportation expenses," which covers the cost of actually conveying persons and property over distances. Every conceivable item of expenditure that comes exactly within this section of the prescribed classification must appear within the various subdivisions, which are:

Superintendence.

This account includes the pay of officers and agents engaged exclusively in the conduct of transportation, including pay of clerks and attendants and the office and other expenses of officials and their subordinates.

Dispatching trains.

This account includes pay of train dispatchers and their operators, clerks and attendants, and all appropriate incidental office and other expenses connected with train movement.

Station employés.

This account embraces the pay of agents, clerks and attendants of stations, also warehousemen, freight-house foremen, and other employés of freight stations.

Weighing and car service associations.

This account includes expenses of weighing and inspection bureaus and car service associations.

Stockyards, grain elevators, coal and ore docks.

This classification includes pay of employés and supplies used in connection with operating stockyards, grain elevators, coal and ore docks which are not conducted as "outside operations."

Station supplies and expenses.

This account includes cost of fuel, water, steam, and supplies used in heating stations, waiting rooms, freight and passenger offices and other station buildings, furniture, renewals and repairs, telephone service, and other expenses of a kindred nature.

Yard masters and their clerks.

This account includes pay of yard masters and assistants, foremen and their clerks and attendants, employés engaged in calling train men, also watchmen and detectives in yard service.

Yard conductors and brakemen.

This account includes pay of yard foremen, brakemen and switchmen engaged in yard and terminal switching service.

Yard switch and signal tenders.

This account includes pay of employés engaged in signal and interlocking plants used in the movement of yard trains.

Yard supplies and expenses.

This account includes expenses of yard masters, yard foremen and their clerks and attendants, including heating and lighting their offices and supplies furnished therefor.

Yard enginemen.

This account includes pay of engineers and firemen engaged in passenger and freight yard, and terminal switching and passenger service.

Engine-house expenses — yard and road.

This account includes pay of and cost of supplies furnished to employés engaged in wiping, cleaning, firing up, dumping, boiler washing, cleaning fire boxes, watching

and dispatching locomotives, and other engine-house expenses for yard and road locomotives.

Fuel for yard and road locomotives.

This account includes cost of fuel issued to yard locomotives, including cost of loading into tenders, including also proportion of pay of fuel agents and clerks in accounting for fuel.

Water for yard locomotives.

This account includes cost of water furnished to yard locomotives, including cost of labor and material consumed in operating water stations, also supplies for water yards and locomotives for water supply.

Lubricants for yard and road locomotives.

This account includes cost of oil, grease, waste and compounds for the lubrication of yard and road engines.

Road enginemen.

This account includes pay of enginemen and firemen while engaged in revenue train service, with the pay of engineers and firemen engaged in work train service to be charged to the work on which they are engaged.

Operating power plants.

This account includes costs as follows: pay of employés engaged in operating power stations, engine rooms, boiler houses, power houses, etc., including fuel, water, and other supplies and expenses connected with operating power plants.

Road train men.

This account includes pay of train auditors, conductors, baggage men, brakemen, flagmen, train porters, and other train men engaged in revenue train service.

Train supplies and expenses.

This account includes costs as follows: pay of car cleaners and expenses incident thereto, pay of employés engaged in handling fuel for heating cars and removing ashes, and other expenses in connection with supplying heat to cars at stations and yards; being all employés

and expenses in connection with lighting, lubricating, iceing, and watering cars and other expenses in connection with train supplies and expenses.

Interlockers, block and other signals—operation.

This account includes pay of employés operating signals and interlocking plants (other than those used for the movement of yard locomotives and trains), also expenses incident to the operation of such signals.

Crossing flagmen and gatemen.

This account includes pay of gate keepers for street and highways, also flagmen and the cost of supplies used by them.

Drawbridge operation.

This account includes all labor expended in the operation of draw bridges and cost of supplies in connection with such operation.

Clearing wrecks.

This account includes all expenses of clearing wrecks except those of work trains, which should be charged to the special work on which the train was engaged. This account includes cost of material and labor expended in replacing wrecked equipment upon the tracks and all attendant expenses, including the pay of train men and supplies used while engaged in clearing wrecks.

Telegraph and telephone—operation.

This account includes pay of telegraph operators and messengers other than those employed in dispatching trains. The pay of telephone operators, including supplies for and expenses incident, and the use of telephone equipment, including also all other expenses incident to telegraph and telephone operation.

Floating equipment—operation.

This account, when not chargeable to outside operations, includes pay of superintendent, clerks and attendants operating all floating equipment, and incidental expenses connected therewith.

Stationery and printing.

This account includes cost of stationery and kindred supplies in connection with transportation expenses.

Insurance.

This account includes all premiums paid by carrier to its insurance fund, or to insurance companies for insuring property or persons where the loss would otherwise be chargeable to transportation expenses.

Loss and damage—freight.

This account includes payments for loss, damage, delays or destruction of freight entrusted to carrier for transportation, and all expenses incident thereto.

Loss and damage—baggage.

This account includes payment for loss, damage or destruction of baggage of passengers, and other personal property, and all expenses incident thereto.

Damage to property.

This account includes payment for damage to or destruction of property, except to freight, baggage and live stock transported, including all expenses in connection with adjustment of such damage.

Damage to stock on right of way.

This account includes payment for live stock killed or injured while trespassing on the right of way, and pay and expenses of employés in connection with adjustments with property owners.

Injuries to persons—operation.

This account includes all expenses incident to injuries to persons in connection with transportation, and expenses in relation to the adjustment of claims coming under this head.

107. *General expenses.*—The last subdivision under operating expenses is "general expenses," which cannot be properly included in any of the above classifications, and which are, as the name implies, expenditures covering the items not specifically provided for by the

other classifications. These expenses are of a nature to be included under general burden or overhead charges in connection with industrial operations, being items that cannot be provided for by direct charges to specific accounts. The subdivisions included in this account are:

Salaries and expenses of general officers.

This account includes pay and expenses of general officers and subordinates not otherwise provided for.

Salaries and expenses of clerks and attendants.

This account includes pay and expenses of clerks and attendants not allocated to the first four divisions.

General office supplies and expenses.

This account includes rent, repairs of rented buildings and fixtures, alterations, furniture, and all expenses and supplies incident to heating and lighting and care of offices, and other general office expenses not otherwise provided for.

Law expenses.

This account includes the salaries and expenses of officers and assistants in charge of the law department, their clerks and attendants, and other expenses of the offices not included in other divisions.

Insurance.

This account includes all premiums paid by carrier to its insurance fund or to insurance policies for insuring property against loss which would otherwise be chargeable to general expenses.

Relief department expenses.

This account includes all salaries and expenses incurred in connection with relief departments, including contributions made to such departments.

Pensions.

This account includes all pensions paid to retired employés and expenses in connection with the administration of pension department.

Stationery and printing.

This account includes all the cost of printing annual reports, cost of blank books, forms, etc.; postage, stationery and supplies in connection with the general offices not chargeable to other accounts.

Other expenses.

"This account includes incidental expenses only—that is, such expenses in connection with 'general expenses' as are not properly chargeable to any of the foregoing accounts; cost of publishing notices of stockholders' meetings, of election of directors, annual reports in newspapers, of dividends declared, and of other corporate and financial notices of a general character; fees and expenses paid to directors; also contribution to funds on account of catastrophes, epidemics, etc."

108. *Importance of analysis.*—These illustrations are given to show the most scientific distribution of expense that has yet been provided in connection with any commercial activity. The subdivisions referred to are entirely to be treated in connection with the consideration of operating expenses, and not to be confused with charges to road and equipment, or additions or betterments. The two last named classifications have to do with those items of expenditure that are clearly of capital nature and are not expenses, but represent additional outlays, which constitute the investment of the railway in such property "as is used in the operation of railways as transportation agents." It is of the utmost importance that the character of the expenditure be most thoroughly analyzed and studied to determine its nature. For example, there is an account, "increased weight of rail," within the general classification of additions and betterments. To this account there is charged the excess cost of the heavier, over the cost of rail displaced and released. This is appropriate to be

considered as a betterment because of the additional earning power that the increased weight of rail gives to the corporation.

109. *Distribution of railroad charges.*—The following interesting illustrations are taken from Professor W. M. Cole's very valuable work.[1]

Now let us see, by a simple illustration, how railroad charges are distributed among the numerous accounts. Suppose an engineer and a fireman devote the morning to running a train for a construction crew distributing ties for a strip of second track. The Interstate Commerce Commission has under the group Transportation Expenses an account called Road Enginemen. The wages of this engineer and fireman seem to belong here; but when we realize that the new strip of track should be charged to capital and not to revenue, we see that the wages should go to some account that will be included ultimately in the principal assets account—Construction, or Cost of Road, as it is more commonly called. We find provision for this in the " Classification of Expenditures for Road and Equipment." Under the account entitled Track Laying and Surfacing, we find directions as follows: "To this account should be charged the cost of distributing, laying, spacing, and lining ties; . . . expenses of locomotives, cars, and crews distributing track material."

Suppose in the afternoon of the same day the same engineer and fireman are running an engine hauling a special train with coal for the company's use. Two important matters may be misrepresented if an error is made in charging their wages. If the wages are charged to the natural account under Transportation Expenses, that is, Road Enginemen, and no charge is made to fuel, cost of fuel is understated, and by so much the road is likely to be misled as to the comparative economy of coal, coke, wood, and oil; again, since this cost will be

[1] Pp. 116–117. "Accounts, Their Construction and Interpretation," Wm. Morse Cole, Professor of Accounting in Harvard University. Published by Houghton, Mifflin Co.

included in the general costs of hauling freight, the comparison between costs and receipts from freight will be misrepresented. Either of two methods of charging will avoid the difficulty; one is to charge the wages for transportation of coal direct to fuel account, the other to charge them to Road Enginemen and then charge fuel account for freight at regular or reduced rates. It is better accounting to represent facts exactly, and at no stage to confuse revenue service with company service. This is the plan of the Commission.

If, the next day, these enginemen are engaged in running an engine to the repair shop and trying out another that has been repaired, clearly their wages should be charged not in the group Transportation Expenses, but in that for Maintenance of Equipment.

If on that afternoon they are engaged in switching cars in the yard, the charge should be made, under Transportation Expenses, to Yard Enginemen. The Commission's classification gives ten accounts for yard expenses. One purpose to which these may be put is to enable a manager to keep run of the adequacy or inadequacy of switching facilities. If the tracks for making up trains are insufficient in number, a large waste is suffered in backing and pulling to arrange cars in such order that they may be dropped easily at their proper stations along the way. Is land for adequate terminal yards cheaper than heavy switching expense? Again, the question is likely to arise at any time whether it is cheaper to provide at a certain station an engine and switching train crew, or to have the switching done at that station by regular train crews who shall be delayed long enough to perform the switching for that station while en route.

Finally, if the enginemen are hauling an ordinary freight train on a single track line and are delayed so much by switching at sidings to pass other trains that they finish their day's work two hours late and must be paid extra wages for that delay, the charge may then be made to Delayed Time, a subdivision (under Road Enginemen) not provided by the Commission. This account may serve, tc extent, to meas-

ure the probable saving from increased sidings, and second, third, or fourth track along the line. Even to greater extent may it be set against the cost of additional train dispatchers and telegraph operators to report train movement.

110. *Determination of elements of cost.*—These various charges of wages for enginemen sufficiently suggest that an accountant must look far below the surface in order to determine all elements of cost, for here to the superficial observer the men were doing identically the same work in all cases; and yet the disposition of the amount of their wages is an important element not only in determining profits, but also in the statistics by which the manager must determine his policy. In four of the five cases the charge comes out of revenue, and hence profits would not be affected if the wages were carried to any one of these accounts rather than to another; but any confusion would have hidden costs in conducting different parts of a railroad's service. In the first case, however, since charging to the natural account would have been to revenue, whereas the charge properly should have been to capital, it would have understated both the profits and the resources of the road.

111. *Information necessary for the manager.*—Let us now take up the same sort of thing from a slightly different point of view. We have considered some accounts and what they stand for. Let us now take a simple case of exercise of judgment by the manager, and, as a hint of what accounts must be kept, see what information he desires to get. Mr. J. Shirley Eaton, in his book entitled "Railroad Operations: How to Know Them," uses for illustration of one of his points the question of the best way to get a particular bit of passenger traffic. Is it better economy to run a passenger train, to add a passenger coach or two to a freight train (making what is called a mixed train), or to give up altogether the attempt to get traffic? Let us use his illustration, adding a few elements for our particular purpose here.

112. *The passenger train.*—The first question, of course, is as to the cost of the passenger train, which will be the maximum cost of carrying the traffic. This can be estimated fairly well

from the figures of cost of fuel, enginemen, train service, maintenance of equipment, etc., with a few extra costs that may be involved in the service of gate-keepers, ticket-sellers, etc., for that particular train; for sometimes a train goes along at such a time of day that it involves extra hours and extra help for the service along the road. Next we have to estimate the additional revenue from that particular train; and by this we mean not merely the earnings of that train, but the earnings of that train that the other regular trains could not get. For example, without such a train it is possible that some of the traffic would be picked up by later or earlier trains if this one were not sent out. On the other hand, however, the revenue from a train may be greater than the earnings from that particular train. Some trains which are run at an apparent loss are continued because they make suburban towns possible for residence to people who, though they seldom use those trains, would refuse to live in the country at all if transportation were not available whenever their need may arise. Such trains, therefore, though they be usually almost empty, secure large suburban traffic both morning and afternoon.

113. *The mixed train.*—We have now seen means of determining or estimating the cost of the passenger train and the probable revenue, and we have still to determine what would be the cost and probable revenue of the additional passenger coach or two on a freight train. The actual additional direct cost of the passenger car or two cannot be large, but some costs are likely to be forgotten. The obvious costs are extra fuel and extra stationery (for reports) and lights; but the danger of accident is greater on a freight than on a passenger train, and this means so much greater cost, either direct or indirect, for loss and damage. It is difficult to stop a heavy freight train at any exact given spot, so that to stop a passenger car in front of the passenger platform involves more or less of power (or fuel), more wear, especially on brake shoes (or more delay in slowing down very gradually), or more risk to passengers if they are not set down exactly at the station. This last danger, which seems very trivial, is so great that most

railroads refuse to sell tickets for stations at which trains are not advertised to stop, even though the trains are sure to stop near the station for water or for a grade crossing; railroads are liable for damages for a sprained ankle or other injuries if the passenger is not given a safe place to alight.

Finally, it must be realized that the revenue from the mixed train is likely to be less than from a passenger train. It furnishes a less desirable mode of travel, enables a road to compete less well with other roads at competing points, and, since the conductor is occupied in looking after his freight, is less likely to yield correct fares. Only when all these things have been considered is the general manager in a position properly to determine whether such a train should be run or not. It is not true, of course, that in every case careful figuring of exactly these items is done, for a general manager from long experience has acquired a general knowledge which enables him to give quick judgment; but this experience upon which he bases his judgment was acquired originally through statistics derived from careful accounting.

It should be obvious, from these illustrations, that good accounting will distinguish and preserve as far as possible, both the cost and the return of every product and of every service; for only thus can a manager know what sort of business he is really doing.

114. *Gas companies.*—One of the best illustrations of cost accounts exhibiting itemized information as to costs may be obtained from the manufacturing and expense reports of gas companies as managed under the best modern system. The items entering into the gross earnings are (a) sales of gas for illuminating purposes; (b) for domestic fuel; (c) to manufacturers for industrial fuel; (d) for power; and (e) to cities for municipal lamps; the total of these being the primary aggregate of gas sales. To this amount will be added other items representing earnings, such as charges rep-

resented by "minimum bills" instead of actual meter readings, and "forfeited discounts," being penalties for failure in making prompt payment. The total of these items added to the previously stated gas sales total shows all the earnings from gas, being credits to earnings offset by debits to consumers on the gas company books. From this total there is deducted the amount estimated to be lost or put in peril from contracting bad or doubtful debts and the result is the true gross earnings from the gas business. The operating expenses deducted from this amount would leave the net earnings from the gas industry.

115. *Gas sales analyzed.*—The item (a) above is made up from various accounts with consumers of illuminating gas at various rates per cubic foot fixed by the company with the authority of the Public Service Commission, the total being the gross sales of illuminating gas; and from this amount is deducted the items of adjustment and correction of errors, rebates and allowances made to consumers, the difference representing the net sales for illuminating purposes.

The analysis of item (b) above discloses various classes of sales of domestic fuel gas of various appropriate rates, depending upon the amount consumed, the total being gross sales of domestic fuel. From this total there is deducted rebates and allowances necessarily granted to the consumer, the difference being the net sales of gas for domestic fuel purposes.

The item (c) above when analyzed shows amounts charged to consumers of industrial fuel gas at various rates depending upon the amount consumed, the total being the gross sales under this class. From this aggregate there is deducted the rebates and allowances

appropriately granted, the difference being the net sales for power purposes.

The item (e) above when analyzed exhibits gross earnings from street lamps of various classes, representing various rates appropriate to the contract, the total representing the amount of charges to the municipality representing the total gas consumed. This outline will be typical of the gross earnings shown upon analysis of gas accounts to be offset by the operating expenses.

116. *Operating expenses analyzed.*—These expenses in general may be divided into four classes: (a) Manufacturing; (b) distribution; (c) collection; and (d) general (or undistributable expenses), which make up the total of operating expenses. This summary when analyzed discloses accounts as follows in connection with manufacturing classification:

(a) (1) Manufacturing coal gas; (2) water gas; (3) cost of purchased gas, the aggregate being the total cost of all manufactured and purchased gas. The next item following is designated as manufacturing loss, being the cost of gas lost and unaccounted for in its journey between the holder and consumer's meter. The next item is the cost of gas used by the manufacturing company itself for power, heat and light, which is deducted from the sum of preceding items of manufacturing cost, the difference representing the net cost *in the holder* of gas sold. The item of cost of gas lost and unaccounted for is analyzed by a special account showing (a) the value of gas on hand the first of the month; (b) the coal and water gas manufactured during the month; (c) the gas purchases during the month; the total being total gas made and purchased. The items

(b) and (c) added to the amount on hand at the first of the month give the total amount of gas *to be accounted for.* The gas on hand in the holder at the close of the month is deducted from the above total to be accounted for, leaving an item of gas delivered to mains. From this aggregate delivered to mains is deducted the gas sold to consumers as shown by the meter readings, also the gas used by the company. The aggregate, being deducted from the amount delivered to the mains, results in the item as shown above and much discussed in public utility commission circles, gas lost and unaccounted for (representing waste).

The classification of expense of distribution, when analyzed, discloses the various items contributing to the total cost as follows: (b) (1) street maintenance; (2) service maintenance; (3) street department expense; (4) pumping gas; (5) meter maintenance; (6) meter department expense; (7) setting and removing meters; and (8) gratuitous work for consumers. To the total of the above items is added the one representing gas lost and unaccounted for, being an item lost in the distribution of the product, the gross representing the total of distribution expense.

(c) The classification of collection when analyzed discloses various items as follows: (1) Cost of reading meters; (2) collection office clerical salaries; (3) collection office expenses; (4) rent of collection office; (5) expense of delivering bills to consumers; (6) cost of outside collections; the aggregate being total collection expenses shown under operating expenses.

(d) The final classification in this group of general expenses is shown by analysis to be made up of items as follows: (1) aggregate of executive salaries; (2) general clerical salaries; (3) general office expenses;

(4) incidental expenses; (5) rent of executive office; and (6) legal expenses. These various items are totalled and to the amount is added taxes and cost of promoting new business, the aggregate being the amount shown under the general account of operating expenses.

117. *Promoting new business account.*—The analysis of the promoting new business account above shown discloses items as follows: (1) advertising in newspapers and otherwise; (2) circulars and distribution, printing of; (3) bonuses and commissions; (4) exhibition expenses for appliances consuming gas; (5) salaries, wages and miscellaneous expenses. These amounts are totalled and considered and compared with the following items: (a) cost of appliances sold and (b) appliance expenses. These then are totalled and the aggregate compared with the amount received as the result of sales of appliances, the difference being either the profit or loss on appliances. If the result is a loss it is added to the five items of expense of promoting new business shown above, and the total cost of all items in this analysis is determined by adding cost of piping and connection expenditure for material, lumber and miscellaneous expense, and if the result is a gain it is subtracted from the aggregate of the five items and the result is the total cost of promoting new business when the same additional costs are added.

118. *Cost of coal gas manufactured.*—In connection with the cost of manufacturing various grades of coal gas, additional items show up in the analysis, viz: (a) coal carbonized; (b) enricher; and (c) bench fuel. The total of these three items being the cost of coal gas manufactured. From this total is deducted the value of coke, ammonia and carbon residuals or by-products, the

difference being the net cost of coal gas manufacturing material. To this total of material is added items as follows: (a) retort house labor; (b) bench repairs; (c) retort house expense; and the result gives the total cost of generating coal gas. To this total there must be added various items as follows: (a) purifying coal gas with reference to labor and material; (b) general works expense for coal gas divided between repairs and building of apparatus; (c) sundry labor for coal gas production; (d) works expense and supplies for coal gas; (e) general supervision expense for coal gas; (f) expenditure in connection with district "holder" station. The total of these items constitutes the cost of purification and storage, which, added to the cost of generating coal gas, produces the total cost of coal gas in the holder. In a similar way the items of cost for manufacturing water gas and combinations of expense in connection with the treatment of purchased gas are set forth in rigid analysis, the expenditure affecting each class of gas producer being lessened by residuals and increased by the miscellaneous expenses of purification and storage.

119. *Classification of expenses for gas furnished the city.*—In connection with the earnings on account of gas furnished for street lamp purposes the expenses are divided as follows: (a) lighting and extinguishing; (b) repairing; (c) cleaning; (d) thawing; (e) rental; (f) inspecting; (g) removing; (h) new installations. The amount of these and miscellaneous items being deducted from the total earnings from street lamps give the net earnings from this source.

120. *Costs and earnings for electric utilities.*—A report showing the gross earnings and operating expense

costs of an electric utility discloses the following illustrative classifications of earnings.

1. Commercial lighting earnings.
   Charges to consumers for electric current used.
2. Municipal contract lighting earnings.
   Charges to cities and villages for electric service.
3. Commercial power earnings.
   Charges to industries for electric power furnished.
4. Municipal power earnings.
   Charges to municipalities for power.
5. Sales of electric current to other public utilities.
6. Miscellaneous earnings from operation not included in the above.
7. Total operating earnings being the aggregate of items 1 to 6 inclusive.

Item 1, commercial lighting earnings, is based on meter readings for electric current furnished for commercial arc lights, and commercial incandescent lights sold on contract basis, the character of all items for this class being represented by the total gross sales, amounts charged to consumers and credited under this head. From the aggregate of these earnings is deducted refunds, adjustments and corrections, the result being the amount set forth in the earnings under classification 1.

2. Municipal contract lighting earnings, when analyzed, disclose details of various municipal contract lighting earnings, showing the average number of lamps, the amount per lamp, the consumption per lamp, the K. W. hours of current consumed. The total of these items for the various arc and incandescent classifications equals the total amount reported under this classification.

3. Commercial power earnings, when analyzed, show

details of earnings based upon meter readings showing charges to consumers for commercial current, for power furnished on various contract bases, and on various contract rates, being the total gross sales of this class from which are deducted all refunds, adjustments, corrections, etc., the result being the net credit to commercial power earnings and charges to the public under this head.

4. Municipal power earnings, when analyzed, show details of various classifications of municipal power sold to cities and villages on various meter and contract bases, from the total of which the refunds, corrections, etc., are subtracted, the result being the net municipal power earnings.

The sales of electric current to other public utilities and miscellaneous earnings from operation, items 5 and 6, are set forth in sufficient detail to show clearly the basis of contracts classifications, rates, K. W. hours, and amount paid furnished in detail, the other miscellaneous earnings items justifying the reporting of the amount of operating revenues under these classes.

121. *Operating costs analyzed.*—From the total operating revenues or earnings shown in the income account under the classifications above there must be deducted operating expenses, being costs shown under the following heads, the figures representing account numbers.

Acct. Nos.	Classifications.
8.	Power cost.
9.	Transmission and transformation cost.
10.	Storage cost.
11.	Distribution cost.
12.	Consumption cost.
13.	Commercial cost.

Acct. Nos.	Classifications.
14.	General cost.
15.	Undistributed cost.
16.	Total of above costs of operation.

Under 8, cost of power, there is a subdivision for (a) steam power generation cost, (b) gas power generation cost, (c) hydraulic power generation cost, and (d) cost of electric current purchased.

Account 8, (a) steam power generation cost, is primarily divided into operation and maintenance, under the former being costs of superintendence, engine labor, electrical labor, miscellaneous labor, steam generated, steam purchased, lubricants, miscellaneous power plant supplies and expenses, the aggregate of these items being the total operation under costs in this operation account. Under the maintenance subdivision, the items are—cost of maintenance of steam engines and turbines, cost of maintenance of auxiliary power plant electrical equipment, cost of maintenance of power plant buildings, fixtures and grounds, the aggregate of these items being total maintenance under this account. Under classification (b) and (c) will appear practically the same subdivisions as under (a) separately for operation and maintenance costs.

122. *Costs of transmission of electric current.*—The summary of all power items costs including current purchases, compiled from analysis of the above accounts, justifies the total reported under the classification of power cost classification. The next item, account 9, transmission and transformation of electric current is divided primarily into operation and maintenance; under the operation being cost of inspecting and patroling transmission lines, cost of labor in operating sub-

station and transformer station, cost of supplies and expenses for substation and transformer station, the aggregate being total operation under this cost account. Under maintenance comes cost of maintenance of transmission lines, cost of maintenance of equipment for substation and transformer station, cost of maintenance of substation and transformer station buildings, fixtures and grounds, the aggregate being total maintenance. The summary of these items is shown to justify and furnish authority for the total shown under this classification of costs of transmission and transformation.

123. *Storage and distribution costs.*—The third item, account 10, storage of electric current, when analyzed, discloses the following account under operation and maintenance:

Operation:
  Cost of storage battery operating labor.
  Cost of storage battery supplies and expenses.
Maintenance:
  Cost of maintenance of storage battery equipment.
  Cost of maintenance of storage battery buildings, fixtures and grounds.
    The totals of maintenance and operation items of cost result in the total storage item which furnishes the authority for this classification.

The item of distribution of electric current, account 11, when analyzed furnishes details under appropriate heads of operation and maintenance as follows:

Operation costs:
  Cost of labor, removing and resetting meters.
  Cost of labor, inspecting, removing and resetting transformers.
  Cost of labor, inspecting and testing meters.

Cost of miscellaneous distribution system operating labor.
Cost of meter department supplies and expenses.
Cost of miscellaneous distribution system supplies and expenses.

Maintenance costs:

Cost of maintenance of overhead distribution system.
Cost of maintenance of underground distribution system.
Cost of maintenance of transformers.
Cost of maintenance of meters.

The totals of these items with their subdivisions furnish authority for the general classification of distribution under operation and maintenance expenses.

124. *Consumption costs.*—Classification 12, consumption of electric current, is primarily divided in connection with the detailed statement into commercial and municipal contract lighting, and an analysis of the accounts discloses the following subdivisions:

A. Consumption.—Commercial.

Cost of trimming and inspecting lamps—commercial.
Cost of commercial lamp supplies.
Cost of commercial incandescent lamp renewals.
Cost of miscellaneous commercial consumption supplies and expenses.
Cost of customers' premises expense.
Cost of maintenance of commercial lamps.

The total commercial consumption is the aggregate of these items.

B. Consumption.—Municipal contract lighting.

Cost of trimming and inspecting municipal contract lamps.
Cost of municipal contract lamp supplies.
Cost of municipal contract incandescent lamp renewals.
Cost of miscellaneous municipal contract lighting supplies and expenses.

Cost of maintenance of municipal contract lamps.

The total consumption of municipal contract lighting is the aggregate of these items.

The totals of the two general subdivisions furnish the figures for the justification of the classification consumption.

125. *Other costs of electric lighting utilities.*—Classification 13, commercial cost, when analyzed, discloses items as follows:

Cost of collection salaries and commissions.
Cost of collecting from consumers.
Cost of reading meters and delivering bills to consumers.
Cost of collection supplies and expenses.
Cost of collection of bills from consumers.
Cost of uncollectible accounts (reserve charge), being charges to operating expenses anticipating bad debts, etc.
Cost of promotion of business salaries and commissions, supplies and expenses.

Advertising, exhibitions, etc.

This account is analyzed very rigidly and a full disclosure of items required.

The total of these items with their subdivisions furnishes justification of this general classification of commercial under operating expenses. The items of general and undistributed when analyzed disclose items as follows, constituting burden discussed in Chapter VII.

GENERAL COSTS, ACCOUNT 14.

Operation costs.

Salaries of general officers.
Salaries of general office clerks.
General office rent.
General office supplies and expenses not distributable.

Law office—general. (For the benefit of the entire utility.)

Miscellaneous general expenses (analyzed).

Public utility commission expenses, being expenses of hearings, etc.

The total operation under general is shown for comparison and distribution based upon percentages.

Maintenance costs.

Maintenance of general office equipment.

Maintenance of general office buildings, fixtures and grounds.

The total maintenance under general costs is shown for comparison and distribution.

The grand total of general is a combination of these items.

UNDISTRIBUTED COSTS.

(To be distributed as burden.)

Cost of injuries and damages to employés generally.

Cost of insurance.

Cost of stationery and printing for operations as a whole.

Cost of operation of stores department benefiting all departments and branches.

Cost of maintenance of stores department equipment.

Cost of maintenance of stores department buildings, fixtures and grounds.

Cost of operation of utility equipment.

Cost of maintenance of utility equipment.

Cost of maintenance of utility buildings, fixtures and grounds.

The total of these sub-accounts being used to audit these general and undistributed burden items of cost.

To the operating costs and expenses as above set forth are added an allowance for depreciation of plant and equipment or reserves therefor; reserves for extraordi-

nary contingencies and taxes, the result being total operating expenses which, when compared with total operating revenues or earnings, result in an amount representing either net operating revenues or deficit, an amount, in other words, showing either profit or loss.

126. *Non-operative revenues.*—The next item in the classification of income account will be non-operating revenues, which item, when analyzed, is shown to contain profits on—(a) merchandise sales, (net); (b) wiring and installation work, (net); (c) rents from land and buildings, conduits, pole lines and apparatus, (net); and (d) miscellaneous.

The accounts when analyzed show:

Profit on merchandise sales (net):
- Total credits from merchandise sales.
- Merchandise purchased.
- Merchandise expense.

Wiring and installation work (net):
- Total credit for wiring and installation work.
- Materials purchased.
- Expense.

Rents from land and buildings, conduits, pole lines and apparatus (net):
- Real estate rentals less expenses.
- Conduit rentals less expenses.
- Pole line rentals less expenses.
- Apparatus rentals less expenses.

Miscellaneous:
- Interest on deposits.
- Interest and dividends from investments.
- Appropriations from municipal funds (in the case of municipal plants only.)

127. *Purpose of the exact classifica*

In each case the deductions from th

class is made so that the net amount of profit under general subdivision of non-operating revenues is shown, and a summary is given of all such non-operating revenues to permit the audit of the amount under the classification appearing in the income account. This miscellaneous item, when combined with the amount of net operating revenue or deficit, produces gross income or (if still a loss) deficit. The utmost exactness is required in making reports of costs. Each foreman, assistant foreman, agent or employé of the company must report labor and material, appropriately applied in connection with each operation or transaction on behalf of the company. The purpose of the exact classifications employed is to make it possible for comparisons to be made between the performance of various departments, subdepartments and divisions and the employés thereof, and to make possible a comparison of expenditures for the period covered with that of former periods.

The figures representing the cost of operating an electric utility plant and producing electric current are valuable in a cost accounting sense to the extent that they can be absolutely relied upon to measure the efficiency of material, of labor, and of supervision. The classifications above shown are given in barest skeleton form and do not assume to show the infinite number of subdivisions of the accounts that are appropriate, and may readily be framed to measure the economical conduct of the business to apply to the peculiar conditions of the business. Generally, material, supplies, fuel, and items shown on the pay roll are supplied by and assigned to the various appropriate accounts and subaccounts with the greatest fidelity and exactness. What has been said in regard to gas and electric utilities applies with equal force to all public utility organizations.

The names given are not considered except as merely illustrative methods in connection with what has been said in this work with reference to the necessity for painstaking distribution of labor and material.

QUIZ QUESTIONS

(The numbers refer to the numbered sections in the text.)

AUDITING

CHAPTER I

1. What is the usual definition of an audit? Is criticism the chief duty of an auditor? What additional qualifications should he have?

2. Is an auditor's duty confined to a detection of errors? Can he always successfully prove wrongdoing when he is satisfied that it exists? How does he differ from the bookkeeper?

3. Is a theoretical education in business principles possible or valuable? What is true education? How does it aid practical experience? How do the analytical faculty and the imagination help the auditor?

4. Into what two classes are accounting professions divided?

CHAPTER II

5. What are the objects of an audit? What does the word "fraud" in the first object cover? What is the usual history of criminal frauds?

6. In investigating for suspected fraud what preliminary scrutiny should the auditor make? To what extent should he investigate suspicious entries, and why?

7. Are errors in mechanical accuracy necessarily suspicious? To what extent should small errors in a trial balance be investigated and why? Describe the analytical method of finding errors in a trial balance and state its advantages.

8. What is the principal effect of errors of principle? In what part of the accounts are they most apt to be found? Give some instances.

CHAPTER III

9. What is a single entry set of books? Is more than one book essential? How much of an audit is it possible to make of such a system? How are profits ascertained?

10. Is single entry ever admissible? Outline such a set for executors, assignees, produce commission merchants or a renting agent. Why cannot a trial balance be taken of such a set?

11. When does single entry show its inadequacy? What conditions necessitate more complex accounts? How does double entry meet these conditions? How does the trial balance exemplify the advantages of double entry?

CHAPTER IV

12. In what character of business is double entry necessary? Explain why sales on credit demand double entry; or long-time bond sales, etc. Why is double entry advantageous in these kinds of business?

13. What does double entry provide? What is its foundation? Give one or more rules for making journal entries. Describe the method known as personification of the accounts.

14. Explain the fundamental principles of debit and credit. Are all credit balances liabilities? What six classifications may be made before determining whether an item is a debit or credit?

15. Discuss the relationship of the business to the proprietor. Can capital be considered a liability of the business? If so, how can expense and other nominal accounts be considered? What then is the profit and loss statement?

16. Give a sketch of the evolution of modern accounts from the day book or journal. Why is a cash book really a journal? Explain the journal character of any other book from which postings are made. Is, or is not, anything gained by journalizing all entries, and why?

17. Is it advisable to journalize all entries? What are the objections? What may be done instead?

CHAPTER V

18. In starting an audit what item would be the first to be verified? If there are checks in the cash, what should be noted in regard to them? What is the proper system of handling incoming cash?

19. How can a defalcation be concealed by "lapping" or holding over remittances? How does the practice of copying deposit tickets in an impression book fail to prevent it? What is the fallacy of depending on stubs or carbon copies of receipt blanks?

20. How can this method of making an independent list of remittances be made to save labor, where many items are received? What is the advantage of depositing all the receipts in bank?

21. Describe the "imprest system" of keeping the

petty cash. In order to have all checks drawn appear on the cash book, how should checks given in exchange for currency be handled? And checks cashed for others?

22. What should the auditor do in regard to due-bills of officers and employees found in the cash? How should temporary unadjusted items be dealt with, in place of carrying them in the cash?

23. Should the auditor be satisfied with ascertaining that the bank account is correct at the end of a fiscal period? How can the account be manipulated between audits? If bank columns are carried in the cash-book, how can stubs be dispensed with?

24. What is the auditor's duty in regard to the reconciliation of the bank account? What is the ordinary form of a reconciliation statement? Describe the four table form and the balanced statement. To what other reconciliations is it applicable?

25. What is the usual form of a cash-book? Why is it advisable sometimes to have the receipts and disbursements in separate books? What is the disadvantage of this plan?

26. Describe some form of a columnar cash-book. In what two ways can cash discount be treated in the cash-book? What are the advantages of the modern method? What is the danger of too extended a columnization of books involving cash? Give an illustration, other than the one given in the text.

27. What is the objection to a loose-leaf form of cash-book?

CHAPTER VI

28. Why is notes receivable a better term than bills receivable? What is the origin of the latter? What

is the usual idea in America in regard to a draft or bill drawn on a customer? What is the best way to register bills receivable when there are many of them?

29. When a note is discounted, to what account should it be credited? Why? What entry is made when the note is paid? How do discounted notes appear on the balance sheet?

30. How can a customer's liability on note account be best kept track of, for the information of the credit man?

31. How should the auditor verify the bills receivable in ordinary cases? What additional precaution should be taken in verifying the notes held by a bank?

32. Why is unearned interest on bills receivable seldom taken into consideration in ordinary business houses? How can it be easily found in a bank?

33. Why is the term accounts receivable objectionable and what should be substituted for it? Describe the controlling and subsidiary accounts in this connection. To carry a controlling account how should the books of original entry be arranged?

34. What items are sometimes listed by bookkeepers as accounts receivable, erroneously from the auditor's viewpoint? What is the auditor's duty in regard to them in preparing a balance sheet?

35. How should the auditor classify accounts receivable? How should items in suspense be treated and how should the prospective loss on them be taken care of? Can any fixed rule be given for the classification of accounts into good, doubtful and bad?

36. What is the auditor's duty in closing books at the end of a fiscal period in regard to providing against loss from bad debts? To what account should actual

losses be charged? What should guide in estimating the amount to be set up as a reserve for bad debts?

37. Is it necessary to check the accounts receivable in detail? If no controlling account is kept, how can the auditor verify the account by totals? What is the best way of verifying the accuracy of customers' accounts? What precaution should the auditor take when sending out verifying statements?

CHAPTER VII

38. To what extent is the auditor usually responsible for inventories? Why can he usually depend on the quantities reported as on hand by responsible employés? Should he be satisfied to adopt the entire inventory as given to him?

39. What is "raw material"? How can the same thing be both "finished product" and raw material?

40. What is the basis of valuation and how does a drop in the market value affect it? What broad principles of profit should be adopted?

41. What are elements of cost besides the price actually paid? Against the inclusion in the inventory of what items should the auditor guard?

42. What is "product in process," "finished product"? How should they be valued in an inventory? What is the objection to valuing at selling price less estimated cost of selling?

43. In a combination of companies into one, how should an underlying company charge out its product to another underlying company which will use it as raw material? Give reasons.

44. Why should the basis of an inventory always

be the same in the same company? Why is it also important that the true basis (i. e. cost) should be used?

45. What are the elements of cost of fixed assets, such as machinery and tools?

46. How should a factory value these things when it makes them itself? Explain the difference between a saving and a profit.

CHAPTER VIII

47. What is depreciation? How does it differ from fluctuation? Is the latter ever taken into consideration in reference to the surplus? When must it find expression in the accounts?

48. Why must depreciation always find expression in the accounts? Why do not repairs do away with the necessity for depreciation allowance?

49. What are the causes of depreciation?

50. What are the elements of depreciation, determining the amount to be charged off? Is it feasible to establish a general table of depreciation applicable to all classes of assets?

51. What are the different methods of charging depreciation? Discuss the four plans usually followed and state your own preference and the reasons for it.

52. Is the amount of depreciation to be allowed, a certain quantity or an estimate? What is the duty of the auditor in verifying the estimate? Of what value in this connection is the periodical appraisal by an expert?

53. In what ways is depreciation expressed on the books? What in your opinion is the best method? If a reserve is set up what entries are made when an asset is

finally discarded? How can a combination of two of the methods be used to advantage?

54. What entries should be made when a depreciated asset is sold? What book may be kept for entries of such assets?

CHAPTER IX

55. At what value should buildings owned by the business be carried on the books? What elements constitute that value? When does cost stop and operating expense begin? What will increase the asset value of a building while in use?

56. What special element governs the rate of depreciation? How should building expenses be treated in the accounts?

57. What is the basis of the valuation of land owned by the business? What additions to original cost are permissible?

58. What is the objection to writing up the book value of unsold land when market value has increased?

59. How should land donated to a factory conditionally, be treated on the books before title is acquired; how, after conditions are met, and title acquired? Discuss the different methods suggested and state your preference and the reasons for it.

60. How does the treatment of land bought for resale differ from that of land bought as a permanent investment? In selling lots from a sub-division, what would constitute the cost and how should unsold lots be valued? Is it correct to add interest on the capital invested to the cost of the land?

61. Criticise the expression "real estate and buildings."

62. What is the auditor's duty in regard to the valu-

ation of patterns? To what should special patterns for specific work be charged? How should patterns be depreciated?

63. What is the basis for the valuation of patents? When only should they be given a greater value than the actual cost of getting them out? What element other than lapse of time may govern depreciation? What is the auditor's duty in case one or more companies in a merger desire to capitalize their patents?

CHAPTER X

64. To what account may the expense of putting a business on a paying basis be charged?

65. Why can no satisfactory definition be given of good-will? What does it, in general, consist of? Is there a property right in it?

66. What rights has the purchaser of good-will? What is the position of the seller in respect to competition with the buyer? What part does the name of the business play in a transfer of good-will; also trade marks?

67. When does the valuation of good-will come under the notice of the auditor? How does the attitude of the seller affect the valuation? What is the principal basis of valuation, and what elements affect it? Does it differ as between individuals, partners and corporations?

68. Why should a sufficient number of years be taken into account in fixing the earning power? What should the auditor note as the essential to averaging earnings?

69. How may average earning power be determined? Should variations in the earning power be allowed to affect the valuation of good-will?

70. What should be the relation of good-will to profits? Should good-will, once legitimately put into the accounts, ever be charged off? How can good-will be recognized and paid for in acquiring a business, without putting it on the books?

71. What illegitimate use is made of the good-will account? What is the auditor's duty when he encounters it? Explain the expression "number of years purchase"? What does the capitalization of earnings mean and how is it calculated? If good-will is charged off, does it establish a secret reserve?

72. What are deferred charges carried as assets? Why are they thus carried? Give some examples?

73. When may advertising be regarded as a deferred charge?

74. What entries may be made for development expenses; when are these not deferred charges?

75. Give examples of other deferred charges. Should a special account be opened for such a deferred charge as unexpired insurance? Is it advisable to open an inventory account?

CHAPTER XI

76. In examining the assets what kind of mis-statement is principally to be guarded against? What is the danger in regard to the liabilities? Why is it more difficult to detect error in the liabilities than in the assets?

77. How should accounts payable be verified? Why is it difficult to detect the suppression of accounts that may be due by the house? Why would not communicating with the creditors detect it? What should the

auditor do in regard to journal entries disposing of an account payable?

78. How are accounts payable that are accrued but not due, to be treated?

79. How should a street railroad treat its tickets; when they are sold; and when redeemed in fares? Can card tickets out of which each ride is punched be kept track of at all?

80. How are merchandise coupon books often treated by stores? What is the auditor's duty in regard to these classes of liabilities?

81. Why is it difficult to detect unrecorded notes payable? How could such a note exist without appearing on the books? What clues might lead the auditor to suspect the existence of such paper?

82. Under what conditions would he be relieved from responsibility if he did not detect the existence of such notes? What is often done with an individual bill of an officer of the company?

83. Why is accomodation paper hard to locate?

84. To what extent is the auditor interested in the different classifications of bonds? In an original investigation what should he investigate in regard to an issue of mortgage bonds; in regard to income bonds? When can a company substitute equivalent property for that covered by the bonds?

85. Why can unissued bonds be carried as an asset, while unissued stock cannot be? Can bonds be sold by the company at a discount?

86. What is the real nature of bond discount? What wrong deduction has been made from this fact?

87. What is the true theory of discount on bonds? What is the argument in favor of carrying the bond account at the net value? How would the discount be

treated under this plan? What is the auditor's duty in regard to the general treatment of bond discount?

88. If bonds are issued at a premium, how should the premium be treated?

89. In the case of bonds bought at a premium, what does each coupon represent when it is paid? On what basis is the real interest on such bonds calculated? How do bond dealers usually carry their bond holdings and how do they treat the interest on them?

90. What is a sinking fund? What should it consist of? What investments are preferable for it? Why are sinking fund bonds not canceled? When bonds are paid and canceled can they be charged to sinking fund?

91. Why is a sinking fund almost always established out of profits"? Does this, in your opinion, mean that it is chargeable to profit and loss? What is the eventual result, when the bonds are finally redeemed? What is the effect on the apparent book-value of the company in the balance sheet? How does the Inter-State Commerce Commission treat this question? Do you agree with them? What is the true function of a reserve account? What is the real nature of a fund?

CHAPTER XII

92. What differences exist between the capital of a partnership and of a corporation?

93. How is the excess of net assets over nominal capital expressed in a corporation? In what ways is a deficit often taken up in the accounts? When such deficit is covered up in the accounts what is the stock said to be?

94. What is the auditor's duty in regard to the legal

steps to be taken in incorporating a company? How is the subscription to the capital shown in the accounts? Describe the stock ledger and show why the stock should be credited to the holder. How are transfers of stock recorded on the stock ledger? Is the certificate of stock, the stock itself?

95. How is the payment for stock evidenced? What precaution should the auditor take in regard to stock issued for property? What is his duty in regard to the valuation of the property? What is his duty when stock is sold at varying prices? What salaries are paid in stock, how should they be charged on the books?

96. What is the auditor's duty as to verifying the issue of stock? What is his duty as to the outstanding stock in audits subsequent to full issue? Must he examine all transfers? If the stock does not balance how can he most easily detect the errors? How much is the auditor relieved from responsibility when stock is registered by a trust company?

97. What is the usual custom when stock is sold at a discount and the proceeds invested in fixed assets? What is the auditor's duty in regard to this discount? What should be done when the stock is issued directly for the purchase of fixed assets? If stock is sold at a premium what may be done with the premium? In the absence of special provisions what is its real character?

98. What is the duty of an auditor when a company has different classes of stock? How does a mis-statement of profits affect non-cumulative preferred stock?

99. What is the status as a liability of unpaid cumulative preferred dividends? In this regard how would a balance sheet for creditors differ from one for stockholders?

100. What is treasury stock? What are often wrongfully called treasury stock? Why should the auditor know the law in regard to treasury stock in the state by which the company's charter is issued? What is the position of treasury stock as to voting power and dividends?

101. How does stock usually get into the treasury? What credit should offset it when donated? What entries should be made when such stock is sold at a discount? Does donated treasury stock establish a surplus?

102. What is the auditor's duty if the balance sheet over-estimates the value of the company? If there is an under-estimate of net value, what is said to have been established? What is the usual object of a secret reserve? What are the opinions of some high authorities in regard to the auditor's duties when he discovers that a secret reserve has been established?

103. What is the objection to the practice? When it consists of unrealized values how can the true condition be stated?

CHAPTER XIII

104. What is the revenue account? Why is it divided into tables? What are the usual tables into which it is divided? Is there any inflexible rule for making up these tables? How can the auditor best decide as to the classification of the items? Why should he always follow the same plan in different periods of the same concern?

105. What is the objection to keeping purchases and sales in a single merchandise account? What items should be treated as deductions from sales and not as charges, and why? What is the auditor's duty in

regard to the method adopted for recording sales? How can salesmen's commissions be most easily taken care of?

106. How are shipments to branches often erroneously shown in the accounts? What is the objection to billing goods to branches at more than cost? What is the proper method?

107. How should installment sales be treated? Why should not the total sales be credited to revenue? Under what circumstance can full credit be taken for sales for future delivery? What precautions should the auditor take if this is done? What is the correct principle in regard to such sales?

108. What are the different methods of treating sales in the revenue account? What does each method show?

109. How is cash discount carried on the books of original entry? Explain the two methods usually used and the reasons for them. What is the auditor's principal concern in regard to it?

110. What attention should be paid to cash discount liable to be deducted in making up a balance sheet? What is the usual American idea as to the time at which it enters into the accounts? What two different views are taken of it as to whether it is a reduction of price or a capital expense or profit? What are the arguments for each view and the auditor's duty in regard to it?

111. Why should discount taken be kept separate from discount given? Why is it important that neither shall be mixed in the accounts with interest?

112. What is the distinction between cash discount and trade discount? Give a definition of each. What is the auditor's duty as to verifying cash discounts? Why should he pay any attention to trade discounts?

113. What is a voucher? Why are credits hard to verify? How is the auditor limited in regard to them?

114. What is the essential element in a voucher for payments? How can they best be audited? How may an apparently good voucher not be a real one? Give illustrations and state the auditor's responsibility in regard to them.

115. What should the auditor do when an office is careless about taking receipts for cash payments? Why are vouchers for journal entries necessary? How should an auditor scrutinize and identify vouchers? Why should not checks made to the personal order of an officer of a company be indorsed by him in blank? What is the duty of an auditor when he notices any such careless habits in an office?

116. Why should items in an expense column be especially carefully vouchered by the auditor? When are cancelled checks admissable as vouchers?

117. What is the auditor's duty in regard to payrolls? How many persons should have passed the payroll and certified the payment?

CHAPTER XIV

118. How were books "closed" originally? What is the "balance account"?

119. What items go into the third or profit and loss table of the revenue account? What are the net operating profits and net profits?

120. Why should percentages be made up from the foregoing tables? What use should the business be able to make of them?

121. What other method than percentages may be

used to show the rise and fall of the total amount of business?

122. Why is it important to find causes of loss and gain? What may the accountant and the cost accountant do to help the manager of the business?

123. Is it necessary to have separate revenue statements for each department of a business? If so, what information is it the duty of the auditor to acquire? What difficulties will he meet?

124. Why is the distribution of general expense even more difficult? What may be done in a department store to divide general expense among the departments?

125. What is done with the net profit from the profit and loss table? What further items go into the surplus account? What is the surplus? From what sources may it be derived? How may it be divided on the balance sheet? Why should extraordinary items be put into surplus rather than profit and loss?

126. How may a profit be correct from a bookkeeping standpoint and not one in the auditor's opinion?

127. What is one crucial test of a profit? Is a statement of profits in a going business a statement of facts or an opinion? Can interest on stockholders' capital be charged as a cost of development work?

128. What are capital expenditures? How should the cost of alterations that increase efficiency be treated? When ample reserves have been set up against the old assets, what is the treatment when new assets are bought to replace them? To what are ordinary repairs chargeable? How is the sale of a depreciated asset treated in the accounts?

CHAPTER XV

129. What is an essential to the payment of a dividend? What methods are sometimes followed?

130. What examination should the auditor make of the items in a balance sheet to determine whether a dividend is justified? In whom does the power to declare a dividend rest? What is the auditor's duty if he thinks the dividend not justified?

131. Is it always an essential that the money be on hand to pay a dividend? If not, what method may be adopted?

132. Can a board of directors ever be forced to pay a dividend?

133. What is the status of stockholders who have not paid up in full?

134. What is the difference between cumulative and non-cumulative preferred dividends? What is the relation between dividends on preferred and common stock?

135. What two methods of paying dividends are used and what are the entries necessitated by each? To whom is a dividend payable? What is meant by closing the transfer books?

136. What is a liquidating dividend? On what basis is it paid?

137. In a partnership where the profit-sharing rate is different from the ratio of capital, how is the excess above capital dividend? Under similar conditions when the capital is impaired, what should be the procedure when one or more of the partners have made loans to the business?

138. When there have been heavy losses, what is the danger in paying liquidating divider[illegible] proportion to their capital? If [illegible]

tain what is the only safe plan to pursue, and why? Why does the profit sharing ratio apply to the losses disclosed by liquidation?

139. When does the distinction between principal and income most often come to the notice of the auditor?

140. In which category should profits on bonds or stock originally belonging to an estate be put?

141. How should wasting assets be treated? How should the premium on bonds held be treated?

142. What are usual charges against the principal of an estate? How should the following be treated; taxes, alterations and additions to property.

143. What should be done concerning contracts made by the testator? To whom should the trustees pay any profits from the contracts? Are the expenses of management chargeable against income or principal?

144. What accrued income belongs to the principal? What is the difference between British and American practice in regard to dividends on stock held?

145. What should be done in regard to the division between principal and income when a company declares a dividend larger or smaller than its actual earnings for the period?

146. What is the difficulty encountered when extraordinary cash dividends, or stock dividends are paid on stock held? What are the arguments for and against giving them to the principal? What conflicting decisions have been rendered? Why does the Pennsylvania rule seem to be most equitable? In all these conditions what should the auditor advise his client to do? How should he advise a holding company to treat dividends from underlying companies?

147. From what does the confusion in all these cases arise? What is a necessary quality of income? What,

however, must govern the final decision of the disposition of an item? How could attorneys save a great deal of confusion resulting from the different constructions of wills?

CHAPTER XVI

148. What should be the attitude of the auditor to his client? To what extent can he yield to his ideas? Why is the frequent audit better than the annual? Why should the auditor use the same assistants each time for the same client, as far as possible?

149. What should be his attitude to his client's clerical force? To what extent should he consult their convenience in arranging the work? In case of opposition what is his duty?

150. In a first audit what study should be made of the business? What use would he make of the information thus acquired? How would he use this information in subsequent audits? What reports should be made by the assistants? Can any inflexible rules be laid down as to the course to be followed in all audits? What is the essential thing in regard to the entire work?

151. What is the custom of many auditors in regard to abstracting the accounts? Describe this method in general. Why is this safer than checking the books? What are its other advantages? How can the closing entries and balance sheet be made by this method? How does it facilitate the word of a continuous audit?

152. Is it imperative that the auditor's report should always be in conventional form? What care should be taken to cover important items to which attention should be drawn? To what extent should det
a report? To what extent should imp

office methods be recommended? What should his formal certificate cover?

CHAPTER XVII

153. What should be the auditor's attitude when a witness?

154. What are the two faults he is apt to fall into? What difficulties will he encounter?

155. Why should he have some general knowledge of the laws of evidence?

156. Why should he be modest as to his own ability? To what can he testify as an expert?

157. What are his limitations as an expert witness?

158. What is the great fault of many so-called systematizers?

159. In putting in a system what must the auditor avoid? What must he insist upon on the part of those in authority?

160. In instituting a system what is necessary besides a scrutiny of the accounts? Give an illustration of the further work required.

161. Why should the ordinary auditor not attempt to install an elaborate system of cost accounts? What are the general features of cost accounts? How is the general expense usually disposed of?

162. What are the advantages of loose-leaf books of account, especially ledgers? How can sales be advantageously handled on loose sheets?

163. What is the advantage of, and objections to a card ledger?

164. What is the Boston ledger and how can it be used to best advantage?

165. Why should the auditor not have any favorite form of books?

CHAPTER XVIII

166. To whom is an auditor responsible? Why is his responsibility not confined to the officers or directors who employ him? What is his duty in regard to suppressing facts known to the officers employing him? What is his duty to the stockholders?

167. What is an investigation as distinguished from a regular audit? How is the scope of an investigation determined? What is the responsibility of the auditor to a client proposing to invest his own funds? If there is no question of the honesty of the seller why is any investigation needed? What care should be exercised by the auditor in making his report on such an investigation? If his client is inexperienced, what is the duty of the auditor?

168. When acting for the promoter why should the auditor investigate his character? What inquiries should he make as to the sellers and the reasons for selling? Why should an auditor refuse to give even a certificate of clerical accuracy to a business which is likely to be fraudulent?

169. When his statements are to be used in a prospectus offering stock for sale why should an auditor be especially careful? When should he not state the average profits?

170. Is it allowable for him to state that he thinks the future business will be profitable? How far can he go in laying a foundation for such a prophecy?

171. What is the auditor's responsibility for the accuracy of his report? What reasonable care must be

take? May he be satisfied by simply verifying the accuracy of the books?

172. What is the auditor's duty if he thinks his instructions are inadequate? Should the amount of his fee influence him at all? What must be the paramount idea in all professional work?

173. What is the auditor's responsibility for his assistants? What sort of a staff is it necessary for him to have? What is the objection to an auditor's limiting himself only to such work as he can personally attend to? How can he effectively supervise a large staff of properly trained assistants?

174. Why should he avoid becoming too trustful of those whom he is auditing?

CHAPTER XIX

175. Can any one make a good accountant? What is one of the first requisites? Why is the power of analysis essential? What is requisite for a cost accountant?

176. Is an academic knowledge of accountancy sufficient for the auditor? Why is practical experience with an established accountant valuable?

177. Why is the profession interesting? What may he learn outside of strictly professional limits?

178. What will he encounter in the way of disappointments? Where can he find the greatest encouragement? What tends to develop a feeling of mutual helpfulness between the accountants themselves?

CHAPTER XX

179. What are the essential general steps in the first audit? What may be done in the first audit that will be helpful in succeeding investigations?

180. In the first audit, what is the first step? What items belong in the cash? How can he test the accuracy of the receipts shown by the cash-book? What special care must be taken with a columnar cash-book?

181. Why are the journal entries important? Why should contempt authority be shown for all but trivial journal entries?

182. What are the correct entries of purchases and sales? Why should unshipped sales be not recorded? How can the outstanding liabilities be ascertained? How may bills payable that have not been entered be discovered? When is the auditor not blameable for not discovering these bills payable?

183. How should disbursement vouchers be checked? How may the individual items on the pay-roll be safeguarded? How may the auditor judge of the correctness of the petty cash?

184. What verification of notes receivable and of bonds, mortgages should be made? How should the ownership of land be verified? What is the auditor's responsibility in regard to inventories?

185. How may the individual accounts receivable be judged to be correct? How is the controlling account verified? With what should it be in balance?

186. What is the auditor's duty in the preparation of the profit and loss account and of the balance sheet? What should be included in these accounts?

187. How should assets subject to depreciation be shown in the balance sheet? In what order

balance sheet be prepared? What should be done with capital stock if there is unissued stock?

188. Define the abstracting method. What does it prove? What should the auditor do with the columns not abstracted? What columns of the purchase register must be verified?

189. On what points should the auditor be absolutely certain?

PART II

QUIZ QUESTIONS

COST ACCOUNTS

CHAPTER I

1. Define Cost Accounting. What is over-systemization?

2. Discuss the comparative necessity for cost data for small plants and great corporations. What should a Cost System properly administered reveal?

3. What is sought for by a competent manager in connection with this subject? How may necessary standards be established? Comment specifically on the standards in connection with proper factory system.

4. Comment upon questions that naturally arise in connection with cost accounting systems as to purpose and methods. Enumerate the various classes of cost accounting systems. Comment upon each of the classes and illustrate them.

5. In detail, set forth the unit cost system, showing the character of the information revealed.

6. In connection with department costs organized to embrace a group of related processes show how the cost sheet should be ruled and information set forth.

7. Discuss common danger in connection with system campaigns.

(In connection with the preceding comment upon dangers incident to loose and slip-shod systems. Comment upon the necessity for intensive study of problems as a prerequisite to devising a cost system.)

8. Scientifically considered what is a cost system intended to do for the manufacturer or contractor?

To what extent have the smaller manufacturers failed to ascertain their costs? What were the conditions prevailing in pioneer days in manufacturing occupations?

9. Explain the insecurity which results from determining business policies by lump sum results. Illustrate the necessity in connection with proper administration and executive control for a disclosure of various elements of cost. Illustrate the demands of various types of minds for information of varying character.

10. Show difficulties in overcoming attitudes assumed by managers with respect to cost accounting data.

11. Discuss modern conditions with respect to abandonment and substitution from the standpoint of the text. Show how problems arise in connection with modern business affected by subject matter of this text.

12. Illustrate special problem in cost accounting in connection with coal mining. Why is a cost system essential when price has been fixed by competition? Illustrate direct and unproductive expense in connection with coal mining illustrat ng application of

this illustration to argument of text. Give elements necessary to be considered in cost accounting in their logical order, using illustrations in connection with each.

13. Give further illustration in connection with production of ore or coal showing the necessity for some appropriate cost system for various expenditures.

14. How is satisfactory cost determined?

What various elements enter into consideration of problems in view of conditions set forth?

15. Comment upon the so called "Cry for results." Discuss depreciation as applied to human organizations as well as to buildings and machinery.

16. Discuss importance of classifications and illustrate how a classification may be really deceptive although technically true. What will skillfully achieved classification accomplish?

17. What will be the effect of correct attention to the elements of cost and proper cost systems?

18. Comment generally upon various kinds of systems for obtaining costs and show essentials of a proper cost sheet form.

19. Discuss cost systems which keep record by departments and by operations showing accommodation appropriate to be provided for data on cost sheets.

20. Discuss more particularly in detail expenditures grouped or crystallized according to machine operations. In connection with this portion of the work comment upon entire purpose of cost accounting work in connection with market prices fixed by ignorant competitors.

21. Discuss further properly classified information as enemy of inefficient factory management.

22. Give example of necessity sometimes existing for continuance of operations at an apparent loss. Set

forth the situation that often prevails in a typical factory.

Show necessity of analysis of labor account. Explain necessity for simple and direct system with respect to location of responsibility. Show the importance of system in connection with purchase and storing of goods.

CHAPTER II

GENERAL PRINCIPLES OF COST ACCOUNTING

23. The "Primer on Cost Accounting" is based on what assumption? What general principle is laid down in connection with the discussion of the system that does not enter sufficiently into detail?

If system is too complex?

The successful cost system must be along what lines?

Comment upon the necessity of squaring the cost accounts with general fiscal records.

24. Give Keep Committee's definition of cost keeping. What transactions are included under scope of general bookkeeping? What transactions are included under scope of general cost keeping?

25. Compare resources as used under the scope of general bookkeeping and cost keeping; liabilities as used under scope of general bookkeeping and cost keeping; incomes as used under scope of general bookkeeping and cost keeping; expenditures as used under scope of general bookkeeping and cost keeping; gains as used under scope of general bookkeeping and cost keeping; losses as used under scope of general bookkeeping and cost keeping. From the standpoint of this primer what do general bookkeeping and cost keeping consider?

26. Define profit. Comment on governing principle of cost accounting.

27. Show how cost accounting is not in conflict with financial accounting. What may be sufficient for financial books to show with respect to pay roll? What additional specific analysis may however be necessary for cost accounting purposes? Illustrate answers to above questions in connection with example quoted as to "repairs of roadway."

28. Explain how valuable information may be covered up in connection with manufacturing account from standpoint of Furniture Factory. Give argument with reference to desirable information as to exact difference of cost of items in types. Explain danger that accompanies use of general figures in connection with manufacturing and material expense.

29. Explain the situation that is outlined with reference to two types of men participating in organization and detail execution.

30. In toy factory illustration cited in this section show the omitted items in cost determination. Explain the changes and complete revolution within factory referred to.

31. What in general is the object of any system of bookkeeping? Illustrate the accounts that should be embraced in financial books in general. The amount of loss or gain may be determined relatively in a crude way. How?

Summarizing the discussion (a) A gain will be evident, when?

(b) A loss will be evident, when?

31. Illustrate the unsatisfactory character of the bare facts of gain or loss using concrete cases.

32. Explain the situation which results from ex-

planation accounts minutely sub-divided and their purpose.

a. Give some examples of explanation accounts, showing losses.

b. Give some examples of explanation accounts, showing gains.

c. What are the more common elements in the combination of costs?

In general, explanation accounts properly classified are necessary for what purpose?

33. Where is the real power of a corporation vested? What rights specifically are here considered? What power, if any, have stockholders as to management?

34. Discuss responsibility in connection with officers and agents.

35. Give the primary distinction of expenditures in business of manufacturing.

In connection with this manufacturing account give the items to be rigidly segregated commencing specifically upon labor and raw material treatment.

36. What are the general divisions of the general profit and loss account and how subdivided into classifications giving a recapitulation and commenting upon it?

37. What is indicated and what is not indicated by the comparative results shown in Figures 1, 11, & 111.

38. How does the construction of classified profit and loss account assist the management? Where is the custodianship of material until issued? To what accounts should productive labor be charged? What items appear on the debit and credit sides of the manufacturing and trading accounts?

39. (a) What effect must be produced by account discount on purchases account? (b) What treat-

ment is suggested for account of good-will; (c) for royalties; (d) for interest paid in advance; (e) for interest paid to the hypothetical company before due; (f) for commissions earned and unearned; (g) for rent paid in advance; (h) for fuel consumed and on hand?

CHAPTER III

40. What are primarily the elements of factory cost? What would be the logical order?

41. What is the meaning of labor? In what respects is it considered in this book? What is the extent of labor in factory cost? Is it confined exclusively to productive work? What should be the system of keeping records of labor?

42. What are the disadvantages of verbal orders? When may they be satisfactory? How may a large number of orders be recorded? Describe a satisfactory system of work orders? What may be the basis for the entry of such orders in a cost accounting system?

43. Discuss the problems of labor administration. To the lowest wage basis the only question to be considered. In what way may labor losses be incurred? To what end must cost accounting steps lead? Of what value are work cards?

44. What need is there to measure labor efficiency? Discuss the question of the relative efficiency of the employés. What obstacles does the cost accountant encounter?

45. Define the "spread" of the value of time. What should the employment slip contain and what is its value? After the employment of the workmen what records should be kept?

46. In what way does the method of distribution of

labor depend on the manner of keeping the cost account? For example, if the cost system is kept according to processes, in what way should labor distribution be taken care of?

47. In what way may the pay rolls be protected? Why is the question of such protection important? What plans may be adopted for recording time? What are the duties of the time-keeper?

48. Where do productive wages belong in the cost accounts? What are the difficulties with the distribution of the unproductive labor? If any portion of the time of the laborer is spent on unproductive work, how should this be indicated? What difficulties are encountered in keeping the records of labor distribution?

49. What is meant by the general pay roll distribution? What does the pay roll stand for, and upon what basis may it be prepared?

CHAPTER IV

50. Describe the organization of the labor department. Under what general supervision is this department? Discuss the daily work of the labor department. What different methods of hiring may be employed? Explain the employment slip, addressograph, clock card.

51. Describe the time-keeping department, and state why it is important. What are the duties of the time-keeper?

52. Describe the method of the time-keeping department of the Wisconsin Iron Products Company. Give a concrete instance of keeping time of a workman. How often is the pay roll made up? Describe "checking" the workmen. If a workman has different occu-

pations, how is his work reported? Explain what is meant by "day turn," "day tonnage."

53. What is the force report? To whom is it made, and what does it contain?

54. What is the "recap" in cost accounting? What is shown in the recapitulation?

55. By whom is the pay roll made out? From what source is the data as to time obtained?

56. Describe the different wage systems. In the premium system, how is padding of the pay roll prevented? What reports are checked over with the pay roll?

57. How may the labor ledger be prepared? Describe in detail one method of recording hours and pay of the workman. In what way are discrepancies in time noted easily?

58. Why may methods applied to one organization be inapplicable to another? Describe the work card, material report and memorandum slip. What is the ledger card?

59. What is the general principle of a labor distribution sheet? Describe the method employed by the Wisconsin Iron Products Company.

60. Give several methods of making up the labor voucher. From what other reports is it made up? Describe a detailed cost sheet. When may a card index be kept instead of the cost sheet?

CHAPTER VI

61. What is meant by "Material"? When is it an asset; and how is it shown in the inventory? What entries on the books are made when material is purchased and when it is drawn out for manufacturing purposes?

62. What is the relation of material to "work in process"? What items enter into the total cost of the product?

63. Discuss the general principles of the treatment of the material account.

64. Into what two classes can material be divided? In small plants where this division is not made, how is the subject of material handled? Describe the functions of the storeroom department. How does the storeroom keeper keep up an adequate amount of the required stores? What reports must he make?

65. What is the store ticket? Who are responsible for the keeping of stores on hand and for their purchase? Describe the invoice register.

66. Discuss the treatment of material intended for stock. What is the stock card? What is the purpose of the stock card? What is the price book?

67. Discuss the difficulties in the treatment of material for production in such an industry as that of the Wisconsin Iron Products Company.

68. Describe the material received record. What is the stock record?

69. How may material be treated all in one account? Describe the process of delivering material from the storeroom department. Describe the system of orders in blue print form followed by the C Manufacturing Company. What are the duties of the foreman in regard to these orders? Through whose hands do these orders go, and what reports are made?

70. How is the record of material used in making a piece made up? How may the card index be useful? What special feature about the stock card is used by the A & B Manufacturing Company? Describe the cost card.

71. Discuss storeroom systems: How are orders, requisitions, and charges against other departments provided for?

CHAPTER VI

72. Discuss the general method of distributing material. What entries are made on the distribution sheet? Explain the make-up of the "spread" or distribution sheet. How is expense further distributed?

73. How may the detailed costs of actual labor and material be recorded? Explain the entries made on the cost sheet, or recap of the detailed cost sheet sent to the office. What totals appear on this sheet, and under what heading is the entire cost totalled?

74. What distribution sheets are in use in railway shops? From what sources are these sheets made up? What use is made of the cost sheet by the storekeeping department?

75. Explain the distribution sheet such as is used by the A & B Manufacturing Company. Why is it important? What is the meaning of the words "trim here" on the sheet? What entries are taken from the inventory? What records form the basis of the "Total cost per hundred" of the material, labor, shop, etc.?

CHAPTER VII

76. Why is the subject of burden difficult in cost accounting? What expenses may properly be included under this heading? Discuss the difficulties of apportioning indirect expenses. What does "overhead expense" include?

77. Describe several methods of apportioning overhead expense. What is the method advocated by Mr. Ernest Reckitt? What factors appear in machine cost? How is the machine rate obtained?

78. Describe the cost sheet, and state why it is so important in cost accounting. What items are included in the various sections of the cost sheet? From what records are these items obtained? What general information may be included in the cost sheet?

79. How may overhead expense be distributed according to the number of productive hours?

80. What is included in shop expense when used as a basis for overhead expense? Discuss the division of burden on the basis of the number of cents of cost per hour of direct labor. Under this plan how is a complete record made up?

81. Discuss the determination of percentages as given by Mr. Clarence M. Day. How may the percentage of expense based on labor cost be found? Give the hypothesis for an added percentage to provide for profits. Explain the making up of the pay roll when labor is used as the only basic cost. State two plans for computing costs; when labor and material are the basic costs, and when labor alone is the base.

CHAPTER VIII

82. Discuss the organization of the system in use by the Bridgeport Brass Company. What is the keynote of their idea?

83. What provisions are made for raw materials received, and en route? What care is taken with store-

room requisitions? With what must the perpetual inventory of raw stores be in balance?

84. Explain the triplicate order issued by the purchasing department. What method is followed when the material is received? What records are kept?

85. Describe the material received and the material delivered cards. What entries are made on the stores ledger?

86. What is the "stock in process" account in the price ledger? What entries are made to this account? Describe the estimate form made by the estimate clerk, and that made by the foreman.

87. What is included in the recapitulation sheet? What is the basis for figuring the preceding year's actual expenditure?

88. What is the quotation card?

89–90. What method is followed in carrying out an order? If the goods are not in stock, what requisitions are made?

91–92. Why must the production order be made in duplicate? How are goods delivered by one department to another placed on record?

93. What memoranda are kept in regard to the production orders?

94. Illustrate an index register for manufactured articles. Under what order numbers may the cost of manufactured articles be posted?

95. What information does the direct labor card contain?

96. How is the cost analysis sheet made up? What is its purpose?

97–99. In what manner can the non-productive expense record of indirect labor be kept? Illustrate what

is meant by a plant order. What do the letters "O.D." stand for?

100–101. From what sources are the items appearing in the monthly statement of costs obtained? What entries are to be made in the journal voucher?

CHAPTER IX

102. What is the expense classification in regard to steam railroads adopted by the Interstate Commerce Commission?

103–104. Expenditures for keeping up the roadway, etc. are put into what account? What subdivisions may be made under this account? What is the distinction between "maintenance of way and structures" and "maintenance of equipment"? What expenses may properly be included under the latter? Name at least ten.

105. What is meant by "traffic expenses"? Why is this a separate heading?

106. What do "transportation expenses" include? Name at least fifteen subdivisions.

107. What part of the operating expenses is included under "general expenses"? What is meant by the heading "other expenses" under general expenses?

108. Why are the foregoing termed "operating expenses," and why are they to be distinguished from items of expenditure such as charges to road or equipment, betterments, etc.? Why is it important that a thorough analysis of the character of the expenditure be made?

109. Illustrate the distribution of railway charges from Professor W. M. Cole's analysis. Suppose an

engineer is engaged on several different jobs, how is the expense to be apportioned?

110. Referring to the quotation from Mr. Cole's book, how may the elements of cost be determined? Why is it so important to determine the exact disposition of charges?

111. What information is necessary for the manager in order that he may judge efficiently?

112. How may the cost of the passenger train be estimated? What is meant by the "additional revenue" of this train?

113. In what way is the cost and probable revenue of the mixed train determined? Describe some difficulties that may arise in deciding on a mixed train and show the importance of correct accounting methods in aiding the manager to form his judgment.

114. Why do the manufacturing and expense reports of gas companies furnish one of the best illustrations of the value of cost accounting? What itemized information is given in such accounting?

115. Discuss the items given in the above accounts, showing what is included in each.

116. Make an analysis of the operating expenses. What classification of manufacturing expense may be adopted? How is the net cost in the holder of gas obtained? What is done with gas lost and unaccounted for? What classification may be made of distribution expenses? Under what head would the cost of reading meters, of delivering bills to consumers, etc. come? What other expenses may be included under operating expenses?

117. Discuss the account connected with the promotion of new business. Where does it properly belong? In this account how is profit and loss disposed of?

118. What items go to make up the cost of manufacturing coal gas? How is the total cost of coal gas in the holder determined?

119. How may the gross earnings and operative expense of electric utilities be determined? Discuss more in detail the analysis of these subdivisions.

120–121. From the foregoing income account what must be deducted? Give the classification of operating costs. Under cost of power what subdivisions should be made? What items go to make up the total operation under costs in the operation account?

122. Where is the summary of power items costs reported? Into what subdivisions are the costs of transmission and transformation of the electric current divided? Under what heads would appear, the cost of inspecting the lines, expenses of the sucstation, of keeping up stations and fixtures, etc.?

123. How may the items of storage of current and of distribution be severally subdivided?

124. What is the classification of consumption costs? What distinction, if any, may be made between the classification of commercial and of municipal contract lighting?

125. Where does the cost of reading the meters, of collection supplies, of promotion of business, etc., appear; under what general classification? What justification is there for putting the general classification of commercial under operating expenses? What items of general and undistributed constitute burden? What allowances must be added to the operating costs and expenses, such as depreciation, etc.?

126. What is meant by non-operative revenues? How may these be analyzed?

127. What is the purpose of the exact classifications

described? What value in a cost accounting sense, has the cost of operating a plant, and that of producing the current? Discuss the care given to the preparation of the accounts.

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